THE

SOUTHERN AGRICULTURIST.

OCTOBER, 1832.

PART I.

ORIGINAL CORRESPONDENCE.

ART. LXXVII.—*An Address delivered before the Horticultural Society of Charleston, at the anniversary meeting, July 11th, 1832; by* Dr. S. H. DICKSON.

(Concluded from page 456.)

Horticulture is entitled to our special attention, on account of the unequalled opportunities which it affords for obtaining a minute acquaintance with some of the most striking, interesting, and important of the operations of the material world. The study of nature, is the most delightful and improving of all studies. Physiology, the study of *living* nature, is carried on with peculiar advantage in connexion with horticulture. The gardener, by the closeness of his intercourse with the plants under his care, and the extreme minuteness of his necessary attention to them, becomes familiar with all their habits, and (if I may venture so to express myself) intimate with them and their modes of life and action. In the investigation of the upper ranks of animated beings, great difficulties are to be encountered, arising from the complex and varied functions to be performed, and the nice and intricate structure or complication of structures necessary for their performance. In the several gradations of being, proceeding downwards in the scale, we find this complexity becoming less and less,

until we arrive at the vegetable kingdom. The vital processes of nutrition, motion and reproduction, are here exhibited, in a condition the most simple, and under contingencies least unadapted for observation and detection. He who is desirous "to look through nature up to nature's God," will find in a garden the best commencement of his inquiries. Here, he may seize the lowest link in the chain of animated creation. The lichen, that with its velvet growth, conceals the surface of the rugged rock—the air-plants that realize the fable of the camelion, and subsist and flourish upon air and atmospheric moisture, cannot fail to attract his notice. A single leaf of the leaf-plant laid upon the ground, or hung by a thread, will throw out numerous stems and full foliage. I have seen a Venezuelian shrub adhering by fibres, which we must call roots (though they are rather tendrils) to the fork of a dry stick, glowing with flowers of luxuriant beauty. The Ærial Epidendrum (*Epidendrum flos aeris*) is often plucked by the Javanese, on account of the elegance of its leaves and flowers and its exquisite odour, to be suspended by a silken cord from the ceilings of their apartments, where it continues to put forth from year to year new leaves and blossoms, and diffuse a new fragrance. Many will thrive in water alone—and others, which require to be bedded in the earth, will bear actual inversion, the branches absorbing the nutriment which the roots were originally made to receive, while the latter, in time, become branches when thus exposed to air and light, and throw out leaf and flower at every extremity. Willoughby affirms this to be true of several species, especially of the Cherry and Willow tribes.

How apparently simple, yet, how truly inscrutable is this process of nutrition—digestion—appropriation. The same elements, few in number, and of properties singularly unlike those of the secretions which result from their combination in the vessels, juices, flowers, and fruits of vegetables—the same elements, hydrogen, oxygen, nitrogen, carbon, and, perhaps, a metal, or an alkali the oxyd of a metal, are absorbed by the root, or by the leaf, acting as a lung, enter into the constitution of all the parts of the plant, and give rise to all its varied products. The exquisite fragrance of the Rose and Violet—the aroma of the Spice flower—the delightful odour and flavour of the Strawberry and the Peach—and the energetic medicinal virtues of

Camphor, and Cinchona, are elaborated thus incomprehensibly from the limited materials of soil and atmosphere, presenting no peculiarity in any degree adapted to explain, or account for the wonderful diversity of result.

Plants possess, like animals, the power of motion, both perceptible and imperceptible. Indeed, the very idea of life implies contractility, or the capacity for motion. The germ of the seed is developed gradually, it is true, but not very slowly—the sap is propelled with great steadiness and prodigious force along the sap vessels, circulating, though not exactly as in animals. In a dark place, if a crevice be made, through which a single ray can penetrate, every plant growing near will extend its shoots and tendrils towards the spot where they can obtain the genial influence of light, to which they would almost seem to know they owe all their colouring and beauty. Of obvious vegetable motion, there are numerous examples in the spontaneous agitation of the leaves of the *Hedysarum gyrans*, in the sudden unfolding of the petals of some flowers; in the evening Primrose, distinctly audibly, as well as visible—in the murderous closure of the *corolla* of the *Dionæa Muscipula*, and the *Apocynum androsemifolium*, upon the insects which have intruded into their inviting recesses, and in the collapse of the now familiar Sensitive plant. Such motion is "agreeably seen," says Darwin, the beautiful poet of the loves of the plants, "in the flower of *Parnassia*, in which the 'males alternately approach and recede from the female, 'and in that of *Nigella*, in which the tall females bend down 'to their dwarf husbands."

In the same paragraph he goes on to mention his surprise at having observed, "several females of the plant '*Collinsonia*, who had bent themselves into contact with the 'males of other flowers of the same plant, in their vicinity, 'neglectful of their own." Nay, if we are to believe the testmony of authors, even locomotion is not altogether denied to the vegetable race. "Were a person, on the eve of 'travelling to the East-Indies," says Good, "to plant the 'roots of an *Orchis* or a *Scabious* in a particular spot in his 'garden, and to search for it in the same spot on his return 'home, he would be in no small degree disappointed, and 'if he were to remain abroad long, he must carry his pur-'suit to half an acre's distance, for thus far would some of 'their roots, perhaps, have travelled in a few years. The

'male *Valisneria* sails from shore to shore, over the water, in 'pursuit of his female, and a multitude of sea-plants float 'through the ocean, and having plenty of food wherever 'they go send out no roots to search for it."

In plants, as among animals, life cannot be said to belong to the individual—it is the property of the species; and the greatest care is taken by nature that though individuals perish, the races are preserved. For this, she expands the charming flowers that perfume the air of spring—for this, she ripens the rich fruits of yellow autumn. No balmy zephyr can breathe without fertilizing the beds which give it "*Sabean odour;*" downy wings convey the seed in every direction from the parent stock. Buds become gardeners, and scatter the germs of the plants which supply them with food. Seeds are endowed with such amazing tenacity of life as to bid defiance to all contingences that affect them, with a force less than sufficient for their mechanical or chemical destruction, and remain capable of reproduction after having been laid aside for centuries. It is affirmed further, that some of the bulbous roots found packed up in the coverings of the mummies of Egypt, and thus enclosed for three thousand years, have thrown out shoots and flowers when again exposed to the air and favoured by the influences of heat and nutrition.

It is in watching, and imitating, and modifying the results of this mysterious process of reproduction, that horticulture has obtained her proudest triumphs. By the marriage of two similar individuals, she produces a third of rare and remarkable beauty—by engrafting upon a well selected stock, she enlarges and improves the future bud. Flowers are made full or doubled by over-stimulating the plant, and keeping it supplied with nutriment of exciting quality. Although by thus converting the stamens into petals, we destroy the ordinary powers of reproduction, yet nature has provided against even this injurious consequence of too high cultivation, by endowing the roots or cuttings with the property of becoming entire plants. Fruits, we improve in size and flavour by similar processes; by stimulating nutriment and by judicious ingraftation—and since the production of the giant Strawberry, and some of the exquisite varieties of the Pear, nothing in this mode would seem impossible to the diligent and skilful gardener. To him the attempt is not absurd or impossible, as Shakspeare

deemed it, "to paint the lilly or add new perfume to the violet."

The passion for flowers is diffused throughout our whole race, and unlike every other of our innate propensities, is obviously unmixed with any alloying or debasing object as an impulse or motive. They are the earliest and most cherished playthings of childhood, and our mature age can discover nothing capable of giving more permanent or more innocent pleasure. In a few expressive words the Messiah has communicated his deep sense of the beauty of these charming objects. "Behold the lillies of the field! They toil not neither do they spin; yet Solomon, in all his glory, was not arrayed like one of these." Bacon placed before his eyes on the table of his solitary study, a vase filled with these gems of a day, and considered no perfume so sweet as the odour of garden earth freshly dug, and moistened with the juice of the grape. Milton, in his touching enumeration of privations from his blindness, does not omit to lament plaintively

"The sight of vernal bloom and summer's rose."

and shews his estimation of a garden in numerous passages of his divine poems—among others, in the melancholy adieu of Eve, when expelled from Eden.

"Must I leave thee Paradise?"
—"O flowers
That never will in other climates grow—
My early visitation, and my last
At even; which I bred up with tender hand
From the first opening bud—and gave ye names—
Who now shall rear ye to the sun; or rank
Your tribes, and water from th' ambrosial fount!
How shall we part"—
"And breathe in other air
Less pure—accustomed to immortal fruits."

Paradise Lost, Book xi.

The cottager trails over his porch or lattice, the Eglantine and the Clematis—and the pent up citizen and pale artizan must be poor indeed, and narrowly lodged, if they cannot find room on a mantle-piece or rude shelf, for a geranium, or jonquil, or some domesticated wild flower. And when we meet in these humble domiciles such simple

decorations, how promptly and involuntarily do we draw the most favourable inferences, as to the taste and gentle dispositions of the resident. Our sympathies respond instantly—

"One touch of Nature makes the whole world kin."

Yes! She will have every where her votaries and her worship. Her temples abound; every grove, garden, and forest; "each bourne and bosky dell" resounds with the adoration paid her. He, the great Author of Nature, "who gave us all things freely to enjoy," has made us all susceptible in a greater or less degree of these delights; has implanted in every bosom a craving for green fields, and an ardent fondness for rural pleasures, which nothing but long and absorbing habits can ever obliterate or destroy.

I would not, however, defend the excesses to which this passion has been carried, and which, indeed, have occasionally reached an intensity resembling infatuation or delirium. Every one has read of the immensely disproportionate sums which the foggy Hollander, in his enthusiasm, was wont to give for a new and beautiful Tulip. Nor can I offer an excuse for its misdirection—the perverted taste, which, overlooking the sweet and modest denizens of our own fields, takes an exclusive interest in exotics, expensive and difficult of procurement, recommended by little else than their rarity, or the distance whence they were brought, and the impediments in the way of reconciling them to the opposite climate, and the new circumstances in which we place them.

There seems a peculiar propriety in this fondness for a garden, as constituting a part of the female character. It has been so in all ages and nations, from the early period when

"Proserpine gath'ring flowers
Herself the fairest, by the gloomy Dis
Was gathered"———

down to the introduction of the elegant Camellia into the parterres of France, by the scarcely less elegant and graceful Josephine.

Flowers form beyond comparison, the most chaste and appropriate of all the decorations of female beauty, which

requires to be adorned, if adorned at all, with so critical and sparing a hand. There is no variety of complexion which may not be perfectly suited by a tasteful choice. Those who work in mosaic, affirm that there are not less than 1600 distinct tints of colour in the mineral kingdom; but, who would pretend to enumerate those which shine in our gardens and green-houses, and bedeck with spontaneous luxuriance our fields and forests.

Flowers afford a new and delicate language to passion. Love has always been fond of expressing itself by association with them, and poetry has no softer or more successful allusions than such as point to these favourite objects of nature. "In all ages," says a late agreeable writer, "they 'have been made representatives of innocence and purity. 'We decorate the bride, and strew her path with flowers; 'we present the undefiled blossoms as a similitude of her 'beauty and untainted mind, trusting that her destiny 'through life will be like theirs, grateful and pleasing to 'all. We scatter them over the shell, the bier, and the 'earth, when we consign our mortal blossoms to the dust— 'as emblems of transient joy, fading pleasures, withered 'hopes; yet rest in true and certain trust that each in due 'season will be renewed again. All the writers of antiqui-'ty make mention of their uses and application in heathen 'and pagan ceremonies, whether of the temple, the ban-'quet, or the tomb, the religious rites, the pleasures or the 'sorrows of man; and in concord with the usages of the 'period, the author of the Book of Wisdom says, 'Let us 'crown ourselves with rosebuds and flowers before they 'wither.'"

It is with reason, then, that we hope for more efficient aid from our female friends in the beautiful department of the florist. Our climate and soil are peculiarly propitious. The sky which bends over us glows like that of Italy with the rosy hues of early dawn and the mellow purple of evening twilight. And it is not the sea only, or the soft calm bosom of the sheltered lake, which reflects the accustomed glories of the firmament. Earth also, offers herself a mere mirror of those splendours which are shed upon her from the star of day, and the lesser lights which govern in his absence. It is from these sources that her offspring gather the bloom and radiance which delight the eye. Like the

diamond, they shine with a derived lustre, and are dimmed and paled beneath the cold and cloudy constellations of the north.

Here then let them bud and blossom, in countless variety and endless succession. We are not of those who would coldly ask the definite object of their existence, and the useful purposes effected by or through them, to account for the profuse abundance with which they are scattered over the face of universal nature. We yield ourselves freely to the facinations of poetry and beauty. It suffices *us* to *know*, that all the bright pictures which surround us—the majestic forest; the wide spreading oak with its grey garniture of graceful moss; the tall columnar pine; the soft plain carpeted with mild verdure; the field of waving grain or fragrant clover; the variegated meadow; the "trim garden," these are all adapted in their several modes to excite pleasurable emotions, to give rise to the gentlest and purest sentiments in the minds of those before whom they are thus munificently spread abroad. We regard them with gushing admiration and gratitude, as among the "glorious works" bestowed upon us by the Infinite Parent of Good.

And it suffices *us* to *feel*, that while in common with all else that he has made, these things of glowing beauty tell loudly of creative power and intelligence, they speak also the softer language of kindness and love; "because ex-'pressly planned by creative benevolence as sources of 'delight to animated beings; and they may well excite in 'us towards Him in whom these attributes concentre, the 'emotions connected in our minds with the endearing 'appellation of Father."

ART. LXXVIII.—*The Flower Garden, and the Culture of Flowers, as conducive to health, pleasure, and rational amusement; by* THOMAS FULLER HAZZARD.

"West Point, St. Simon's Island, (Geo.) April, 1832.

Mr. Editor,—It has appeared to me a little singular, that none of the readers and subscribers of your useful and entertaining Agriculturist, particularly your fair readers, and I hope there are many of them, have devoted a thought to all the charms and allurements of the Flower Garden. I am certain that the lovely daughters of the South cannot be insensible to such refined taste, or indifferent to so amiable and exhilirating a pursuit, I know to the contrary; and I am equally certain, that there are an innumerable variety of the most rare and splendid flowers annually grown throughout the Southern States, both in the cities and in the country, which not only adorn and delight their owners, but are the admiration of all the travellers and florists who may be permitted to examine them. The cause why this interesting department continues unoccupied, must be attributed to the genuine diffidence and retiring modesty of Southern character, and to no other. As you have expressed a wish for me to make, only a beginning on the subject, I will do so with pleasure, and trust it may draw out and induce others during the approaching summer, to gratify the wishes and tastes of your readers in general.

The flower garden, from the remotest antiquity, has ever been considered a sacred place, where all the most chaste and refined feelings of the soul were stirred up. and called forth into maturity and vigorous action. Here, Nature displays her wonderful mystery—her rich and gorgeous tints—her brightest colours—her most balmy perfume. It was a place well calculated to attract the admiration of all the illustrious men and women, both of Greece and Rome. They dedicated such places to their deities, and celebrated various pious and festive rites and solemnities, which, no doubt, in their day and generation, did afford them the highest enjoyments. It was within those classic scenes, that their elegant taste was displayed, their immortal poetry composed, and their literature cultivated to its perfection; and Nature in all her splendour was often almost rival-

ed by the genius and ingenuity of her votaries. This pursuit has not only great antiquity, but the approbation both of sages, poets and saints, in its recommendation. Flora is its goddess, and Hygiea, who presides over Health, is her attendant, whilst Venus and Cupid are ever ready to lend their aid and assistance. Therefore, ye lovely belles of the South, if you desire health, bright eyes, and rosy features, enter the garden of flowers, and exercise in wholesome, and innocent pleasure, which will enliven your mind, enlarge your understanding, warm your heart, and mould your forms, so that you will be prepared to enjoy whatsoever destiny the God of Nature may determine.

In a climate like ours, where the morning and evening of spring, summer and autumn, are so well calculated to invite us to walk forth and survey the beauties of the field, or luxuriate the eye on the exquisite varieties of plants to which it is congenial, I cannot imagine any fancy more rational than to devote a small spot of ground, or a few hours in the twenty-four, to the culture of flowers.

When I meet a young lady who has no taste, no feeling of admiration for such an elegant and refined pursuit,' my mind involuntarily reverts to the character of Mrs. Dame Van Winkle, of tygress memory. Thinks I to myself, you may, fair lady, despise things so simple and innocent, take care you do not admire solids, and use the positive end of your broom-stick, to teach your 'gude man' the phenomena of electricity. With me, a garden of flowers calls forth either gay or lively thoughts, or profound meditation. There are so many exquisite beings, of such curious and complicated structure, so perfect in all their parts, that they proclaim in silence, the incomprehensible wisdom of that infinite Being, whose sovereign will could alone create them. They spread out their charms, their tender flowers, that the sun may mature, and the dew increase their sweetness. They feel the air as it passes, to them it is Nature's priest. The glare of the sun witnesseth both their loves and their nuptials. Who hath a heart to love; here child of Adam, mayest thou indulge the master passion; every flower is either male or female; well may poets of all ages contemplate this subject, and sing in admiration the 'loves of the flowers.'

December, January and February, are prime seasons to plant all kinds of evergreens, shrubbery, hardy roses, and herbaceous plants in general, and this includes a great

variety of choice ornamentals. Every thing which grows either from cuttings or roots, may be put out at this season of the year. March, April and May, follow for all annual and perennial seeds or young plants, taking care, however, of late frosts, as this visiter makes destruction in a very short time. Hydrangias, Hybiscus, Geraniums, and all kinds of vines and Creepers, may be planted, which will afford a fine collection to the florist, and allow him to prepare a rich variety for the season. The different kinds of Wallflower, and double Gilliflower, can be put in now, and delicate plants which require a warm sun. June, July and August are the season to thin out carefully, transplant, variegate the borders and beds, this should be done on favourable days, such as cloudy, and after showers of rain. All the varieties of the Camelia Japonica, can be set out at this period, either in the open air, or in jars, or boxes; they must be shaded and watered regularly: if planted in pond earth, or in blue clay, it will facilitate their growth materially. September, October and November, are the time for all bulbous flowers, all kinds of Poppies, either Persian or European, which are entirely different; all biennials which will embrace a long catalogue, Larkspurs of all sorts, Ladies in the green, Pinks, and all the class of the Sweet William's, both native and foreign, should be planted with great care now. I find it all important to take up Hyacinths and Tulips, and separate them carefully, otherwise they will inevitably degenerate; this can be done with safety in April or May. Should any of your readers make this experiment, I request they would communicate their opinion and the result. This brings the year to a close—health may be secured, idleness avoided, and the heart invited to the beauties of Nature, and to Nature's God.

Tulips are very rare here and require great care, they should be placed in a compost of sand and swamp earth mixed well; they will not succeed if planted in sandy soil alone or left all summer in the ground. I should be much pleased to obtain all information on the culture of this splendid plant myself. Dahlias are another rich and beautiful order of plants, there are a great variety of them both double and single. They grow well here, either from the seed or tubers planted in April, they do not require to be removed from their station, and will continue for years; they should be well dressed in the winter with good rotted ma-

nure. The variegated Marvel of Peru is a brilliant perennial; grows either from the seeds or roots, and reproduces annually. The dwarf Trumpet-flower is also very showy, and grows either from cuttings or roots. All Roses which produce perfect seeds should be carefully collected, separated from the apple and planted in a warm situation. Every seed which comes up will produce a different Rose, this is the only way to raise varieties; they require a long time to germinate, and will consequently try the patience of the florist or amateur. The Champney's rose, a delicate and beautiful variety was produced from the seed of the daily rose. All sorts of China asters are exceedingly showy, and fine coloured, they grow from the seeds, and shou'd be sheltered from the mid-day sun; April is the time to plant them as they are annuals. The varieties of the Crysanthemum are very hardy, and give great ornament to a flower garden, as they bloom early, and display their rich colours, when more delicate belles are unable to appear.

The varieties of the Primerose are very pretty, and will stand our winter, they grow from the seeds and should be planted in January or February. The Zinnia's harmonize very handsomely with them, and should be placed in their society; one is a bright yellow, and the other a light pink. Red and white Wall-flowers are superb, and highly fragrant; they must be planted either in March or in the fall. It is a biennial, and with care, will bloom for a long time; I have it now in all its pride and glory.

Place a strong post with a cross-piece fifteen or twenty feet high in some convenient or conspicuous part of the garden, or in sight of the dwelling house, and plant around, roots of the native Crimson Woodbine, Cherokee-rose, small Pink Multa-flora rose, large English Woodbine, Carolina yellow Jessamine, seeds of the crimson Cypress vine, Morning glorys, and Traveller's joy, and add below some roots of the blue and pink Tradescantia, and you will have a most gaudy and brilliant collection of colours which the eye of a stoic, or a red-hot fanatic would be compelled to admire. They will all bloom at the same time in April, and attract the notice of the humming birds in numbers, whose bright plumage and rapid movements cannot fail to please. I have found the flower garden a great source of pleasure, health, and exer-

cise; every morning some new favourite gaily attired, is ready to attract my notice or please my eye. Since December, I have had a regular succession of flowers, and so they will continue all the year until jack-frost blows his freezing breath upon them, and consigns them to the tomb. A very small spot of ground well arranged, will contain some hundreds of plants, the trouble will be an amusement and the expense a mere trifle.

Our forests, pine-barrens, and prairies, all abound in a great variety of beautiful native plants, many of them vieing with any of the foreign—they all improve by culture:—among this number, the Fringe-tree, Snow-drop-tree, Sensitive briar, Pink and Crimson honey-suckle, well merit prominent places. They can all be propagated either from seeds or roots. I had last summer several most beautiful sensitive plants, which were universally admired by all who saw them. There are also a great number of beautiful Flags and Lilies which abound along the shady and fertile banks of the Altamaha: the white Pancatrum is very curious and fragrant, bulbous, and improves considerably by culture, they are now in bloom. The Yellow flag *(cana flaccida)* is bright and shining in its colour, and displays itself in July. I sent some roots to you. The Sweet smelling Shrub is one of our most choice native plants, its perfume almost rivals the rose of Damascus; they grow either from the seed or roots, planted in a moist place, or in blue swamp-clay, and kept well watered. We have on this island three varieties of Tradescantia, pink, pale-blue and dark purple;—the white I have never seen, the others I have now in full costume;—they may be raised either from seed or roots. The Clematis is also a pretty creeper, now in flower, grows from seed or roots, planted in the fall. The yellow Jessamine of Carolina, if cultivated with care, and planted in blue-clay, will flower twice in the year.

The above is but a feeble effort to comply with your request, I hope it may induce others to continue the subject, for it is one which contains much to entertain both mind and body. I have only glanced at a few plants;—to have been more minute, would have occupied too much of your work. I have also used the names which are most common and best known. Should it afford your readers any amusement, or beguile one tedious moment, my object and wish will then be fully accomplished. I conclude with another extract from an old poem.

"To raise your flowers various arts combine,
Study these well, and fancy's flight decline.
If you would have a vivid vigrous breed,
Of every kind, examine well the seed.
Learn to what elements your plants belong,
What, is their constitution, weak or strong.
Be their physician, careful of their lives,
And see that every species duly thrives.
These love much air, these on much earth rely,
These without constant warmth, decay and die.
The wiset, best, to whom just praise belong,
And all who've sought life's comfort to prolong,
In gardens passed the leisure of their days,
And rural scenes prefered to worldly praise,
Here felt, from noise protected, and from strife,
The sweet enjoyments of rural life.
If nature in her dress is simply neat,
'Tis art which makes her beautiously complete.
View the gay scene where Flora's beauties rise,
'Tis nature's God that all those tints supplies.
Exert thy reason then, and trace the cause,
Of beauty, and well weigh who gave it laws.
In the Creation, the Creator view,
And learn, to Him what gratitude is due.
Why does the rainbow sparkle in our eyes,
For the same cause the tulip's purple dyes,
That to their author, man his thoughts may raise,
Inspired with rapture, wonder, love, and praise."

I salute you, Mr. Editor, with best wishes for your continued health and usefulness.

THOMAS FULLER HAZZARD.

LXXIX.—*On the Culture of the Irish Potato; by* A YOUNG FARMER.

"Charleston, July 5, 1832.

Mr. Editor,—I observed in your March number of the *Southern Agriculturist*, an account of an experiment made on the culture and time of planting the Irish potato, by "*Q in a Corner.*"

With your leave, I will now give Mr. "*Q in a Corner,*" through your useful journal, an account of a successful experiment made on my farm this season.

Early in January last, I selected a piece of land, and made drills four feet a part and six inches deep, in which I laid straw an inch thick, and on this put a compost of stable and cowpen manure to about the same thickness, that is about two bushels to a task row, on which I placed my potatoes (being previously cut, each piece having no less than two eyes,) six inches apart, and covered them with the earth taken out of the drill. As soon as they came up, I covered them with straw and old hay, and listed on this lightly, when they came up a second time, which was about the last of March. I banked on them, and on the 18th of April hoed, and a few days after hauled them.

The vines of these potatoes were uncommonly long, and it was the opinion of my neighbours, as well as of myself, that they would bare very small and few.

On the 8th of May, I commenced digging them, and to my astonishment found them very large and thick. Thus I had the finest and first in the Charleston market this season; and when the market was overflowed with them, I always could command the highest price for ready sale.

I remain, respectfully, your obedient servant,

A YOUNG FARMER.

P. S.—I forgot to state that the tops of these potatoes were killed by the last of those two very severe frosts which fell last winter.

ART. LXXX.—*Account of an Agricultural Excursion undertaken by the* EDITOR, *in the Spring of* 1832.

(Continued from page 479.)

Corn.—In the culture of corn, the plough is comparatively but little used, the hoe being still the chief instrument employed, we are glad, however, to find it getting into

more general use than formerly. In preparing for this crop, the manure is, by most of the planters, spread in the alleys between the old beds, and listed on. By many, however, it is not manured until the first working, when it is placed around the stalks and covered with the plough or hoe. All of the manures mentioned by us as being used for cotton, are also employed for corn: the cotton-seed is, however, most prized, and in fact applied to every crop with the greatest success. A pint to each hill, is the usual quantity, and an experiment made by Mr. James Gaillard, goes to prove that any additional quantity does not increase the product in proportion—his experiment was from less than a pint to one quart, applied to each hill. He, therefore, thinks it preferable to extend this manure over a greater surface than to apply it in large quantities, to a small space. In one instance, Mr. S. G. Deveaux applied it at the rate of seventeen hundred bushels per acre, and the product was at the rate of ninety-six bushels per acre. Used in addition to other manures, it is considered as almost invaluable even when but a small quantity can be applied, increasing the product greatly. But this is not its only recommendation, its application is thought to be peculiarly efficacious in preventing the *firing* of corn. Col. Porcher has also found it effectual in preventing *rust* in corn, and several spots of ground, which, at one time, could not be made to yield anything, owing to this cause has by the application of cotton-seed in small quantities only, been rendered very productive.

Mr. S. G. Deveaux, experimented with plaster of Paris as a manure for corn, by applying it at the rate of two and a half bushels per acre, strewing it in the alleys, on the lists, and rolling the grain in it. The product was not measured, but a striking difference was apparent in the growth and product in favour of this manure.

We found swamp mud comparatively but little used. The late Mr. S. Gaillard instituted the following experiment, to test its efficacy as a manure for this crop.

Experiment upon Corn, Peas and Cotton of the comparative merits of mud and manure made of litter.

1825—Two acres alike in quality planted in corn on beds four feet apart, and six feet on the beds with two stocks in each hole. On one acre eight wagon loads of mud was scattered and listed

in, on the other acre the same number of loads of stable manure listed in, in like manner. The result was as follows:

Acre manured with mud yielded 11½ bushels corn and 919 lbs. of peas,
Acre do. with stable manure 9½ do. 896 lbs. of peas.*

The most general manure, however, is the compost made in the cowpens and stables, and there are very few planters, if any, who have not this at command in sufficient quantities for the corn crop if no other. The quantity applied to each acre varies much, and is necessarily regulated by the quantity each has collected. We do not recollect to have heard of any who applied it in greater quantities than Dr. H Ravenel, viz. twelve wagon (equal to forty-eight single horse-cart) loads. The modes of applying it also varies. Most generally it is spread (if to be had in sufficient quantities) between the alleys and listed on, and the corn planted on this list. By others small beds are formed, and holes made, into which the manure is first placed and the corn then planted, (this is not much followed as the corn is apt to *fire*, should the manure not be well rotted. Others who have it not in sufficient quantities to spread, place it on the lists where the corn is to be planted, and dig it in, mixing it well with the soil. Mr. Daniel Broughton's plan, perhaps, is better still, although more tedious. It is to open a long hole, place the manure at each end, and plant the corn between these two parcels, into which the roots soon extend, and do not suffer from the contiguity should a drought ensue. By pursuing this course, he has been very successful of late years with this crop: manuring after the crop is up has also many advocates, especially when but a small quantity of manure can be had. Whenever cotton-seed is to be applied, it is almost always after the corn is up, placing it around the

* The following experiment proves the efficacy of swamp-mud as a manure for cotton. It was unfortunately overlooked when we were giving an account of the cotton crop.

1828—Half an acre of cotton manured in every alternate row with mud, at the rate 300 bushels per acre, the intermediate rows not manured. The result was as follows:

	18 Rows with mud	99 lbs.	18 rows not manured,	38 lbs. in seed.
1829	18 Rows with mud	62 lbs.	18 rows not manured,	43 lbs. in seed.
	18 Rows with mud	66 lbs.	18 rows sta. manured,	48 lbs. in seed.

In 1830 and '31, similar experiments were made with the mud and cowpen manure, equal quantities of each with similar results, the exact quantity of cotton produced by each not recollected; the memorandum having been mislaid.

stalks and covering it. It soon germinates and comes up, when it is cut down and again covered.

The usual time of planting is about the middle of March, some, however, divide their crop—planting a part about that time, and the balance after all the other crops have been got in: this is done, not only to divide the risk of failure from the seasons, but also for the convenience of minding from the crows. Dr. Ravenel's plan we detailed last year, he never plants any part of his corn crop until the last of April or beginning of May, and he has been more generally successful than those who have planted earlier.

The distance at which this crop is planted, is either four feet square, leaving one stalk, or four by six, leaving two stalks. Major Porcher, in his swamp-lands, made an experiment on three half acres. The rows of all were four feet apart—in one, single stalks were left at one foot, on the second, at two feet, and on the third, at six feet, leaving two stalks; this last produced eight bushels more than the others. Mr. James Gaillard prefers four feet square on a light soil, such as his is, especially should a drought ensue, otherwise four feet by six—leaving two stalks, is thought to be equally productive. Among the experiments made on this subject, is the following, which was furnished by him.

"1825—Two acres divided into quarters, yielded as follows:

						PRODUCTION. Corn.	Pease.
One quarter,	beds 4	feet—dis. on bed,	3 feet,	1	stock,	3 baskets	181 lbs.
One do.	 4	 4	... 1	....	4	.....	212 ..
One do.	 4	 5	... 1	....	4	.....	224 ..
One do.	 4	 6	... 1	....	3¼	.....	264 ..
One do.	 5	 2	... 1	....	2	.....	140 ..
One do.	 5	 3	... 1	....	3	.....	139 ..
One do.	 4	 5	... 2	....	2½	.....	203 ..
Cne do.	 4	 6	... 2	....	2	.....	133 ..

Forty-one lbs. of peas when threshed, measured seventeen quarts."

The culture of this crop consists of from two to four workings. By those who make use of the plough, a furrow is run near to the corn as soon as it is of sufficient height, and this is followed by the hoe. Another ploughing and hoeing, with some, complete the work, except the field be grassy or peas are planted, which is usually done. Those who use the hoe only, give a bed to the corn as soon as it is so high as

to require thinning, and the hoeing is continued as often as is necessary. The average product of this crop from unmanured land, is about twelve bushels: from that which has been and is still manured, from eighteen to twenty bushels per acre. The swamp-lands without any manuring, produce average crops of from thirty to thirty-five bushels per acre, and as much as fifty bushels have been made. But there is a curious fact connected with the inland swamp-lands, which is, that they cannot be cropped with corn for several successive years: that is, the product diminishes so rapidly each year, that it is thought extremely injudicious to plant them with the same crop, without permitting them to rest. But if oats be sown, (and the land is very productive of this crop) it answers every purpose, and the yield of corn the next year is as great as ever. The corn blades are carefully saved for fodder, and on this the planters chiefly rely, for but few, if any, cut the grass out of their fields for hay.

Peas.—When peas are sown among the corn crop, it is usual to drill them on the beds, from stalk to stalk in June, they receive but one hoeing and are then left to take care of themselves. When sown by themselves, beds are formed at the distance of four feet apart, and in July they are sown either in drills along the whole bed, or in chops—the former mode is preferred and a half bushel of seed per acre is used. Mr. Deveaux found plaster of paris an excellent manure for them, and Mr. Joseph Palmer has used swamp-mud with considerable success;—the average product when sown by themselves, is from ten to fifteen bushels per acre. The vines are saved by many as fodder for their cattle during winter.

Potatoes.—On the sea-board and islands, the slip potatoes, (potatoes obtained from the vines) are most relied on for a crop, and, comparatively, but very few roots are planted. In these parishes, on the contrary, the planters depend more on their root than their slip crops, although it is found impossible to keep the roots when taken out of the ground. The reasons assigned are, that slips must be planted at a very busy season of the year, and harvested when the hands can be but illy spared from the cotton fields. The product, moreover, of roots, is greater than that of slips. Generally, therefore, as many roots are planted as are estimated to last from the middle of August until January, and slips to last from thence until March or April.

The old plan of cowpening the land is practised by some, but as far as our observations extended, that of manuring from the cowpen, stable, &c. is as much followed, if not more so. We, of course, refer only to those among whom we visited. Cotton seed is also much used, in quantities of from one-half to three quarters of a bushel per acre. The beds are four feet apart, thirty to thirty-six inches base, and from twelve to sixteen inches high, and brought to a sharp ridge. The potatoes are planted from the twentieth of March to the tenth of April, at the distance of from eight to twelve inches on the bed: whole potatoes are preferred on account of giving earlier vines, though no difference in product has been observed. The first working is not given until the beds are grassy, when they are hoed lightly down, and immediately hauled up. By some, a furrow is run with the plough between the beds before this is done. Two workings are usually given, but by some only one and afterwards the grass is picked out. They are dug for allowance from the fifteenth to the twentieth of August, and are used from the field until destroyed by severe weather. In no attempt yet made have they been successful in preserving them when taken out of the beds. It is the general practice, therefore, on the approach of cold weather, to have a little earth drawn over the tops of the beds, and thus left, they keep until very severe weather sets in, and it is usual to have them in use out of the fields until January. The average product of unmanured land, is stated at one hundred and fifty bushels per acre. Manured land has produced from four to seven bushels to the row of one hundred and fifty feet.

Slips are cultivated on the same sized beds, usually following a crop of oats, these latter are by many manured with cotton-seed for the purpose. Three vines are used in planting, and two workings given—the average product is stated at one hundred bushels. Slips will not keep if left in the field as the roots are, they are, therefore, dug early in November, and placed generally in cellars, but are not well preserved in this way. Having thus briefly given the general course of culture, we will detail that followed by Dr. H. Ravenel.

The land cultivated by Dr. H. Ravenel is what may be termed a sandy loam. In preparing for the crop, he has the manure spread where the beds are to be formed, if on

ground previously planted in potatoes. If in cotton, it is spread between the beds and listed on. Four hands are employed per acre to scatter the manure and form the beds. The manure used is principally from the cowpen in the quantities of eight ox cart-loads, (equal to thirty-two single horse cart-loads) per acre. The beds are four feet distant from each other, about three feet base, from twelve to sixteen inches high, and are made altogether with the hoe. The time of planting is about the first week in March, which he prefers, as vines are obtained earlier, and he thinks the product of the early planted greater. Whole potatoes are used for seed in preference to the cut, because they are not so apt to rot, and produce vines earlier. The difference of product between the whole and cut potatoes, is so trifling, if any, as not to have any influence in the decision. They are planted at a distance of twelve inches from each other on the beds, if whole—a little nearer, (say eight inches) if cut. These distances have been ascertained by actual experiments to be the best suited to the crop.* Should the potatoes come up irregularly, Dr. Ravenel supplies the missing places, by sprouts, taken off from those which have sent up a large number, and very often, from off the same bed. They are not hoed until the beds become grassy, when they are hoed down, and after being left for two or three days are hauled up, one other hoeing is all the work bestowed, and is found generally to be enough. The slips are planted, as soon as the vines have grown sufficiently long. It is usual with him to sow oats on the ground intended for slips. These are manured highly with cotton-seed, and no manure is applied when the slips are planted. The beds are made about the same size as for roots, three vines are laid lengthwise of the beds and banked; the banks are about ten inches, with intervals of from three to four inches. Two hoeings are generally given, by which time the vines cover the beds, and they are left undisturbed until they are dug. If the season has been at all favourable, the root potatoes are dug for allowances about the middle of August, and they are used from the field until all are consumed or a frost destroys them. When the winter sets in,

* We have been promised an account of these experiments by the gentleman who made them.

they have a little earth drawn over the beds, and thus protected, they continue perfectly sound until there occurs some severe weather, and it is not at all unusual to use root potatoes from the field until sometime in January. As all attempts to preserve them by placing them in cellars or heaps, have proved worse than useless, it has been abandoned, and they are invariably left in the field to abide their fate. The slips are dug early in November, sometimes in October—the object is to get them in before a frost has affected them.

The product of roots on manured land, is from three to four bushels to the row of one hundred and fifty feet, on that unmanured not more than two bushels. Slips on ground manured by passing the cowpen over it, have yielded three hundred bushels per acre. The average product, however, is not more than one hundred bushels, when planted on the oat-field, although the oats have been manured with cotton-seed. The slip potatoes are kept in large cellars, but are not well preserved in them.

Major S. Porcher, makes his beds in the following manner, a list is formed, and on it a small bed, it is then gone over a first and second time, at each, adding a small quantity of earth, making four operations. The object is to bury all of the grass-seeds, and Major Porcher thinks that by going over it so often, and at each operation taking merely the surface then presented, they will be effectually buried. Cotton-seed is principally used by him for manuring this crop, at the rate of three-quarters of a bushel per acre. His beds are small, about the size already stated above; he plants from the twentieth to the twenty-fifth of March. Prefers whole potatoes to cut, as they are less liable to rot, and give earlier vines;—they are planted at one foot distance on the beds. Root potatoes producing with him more than double the quantity that the slips do, he plants enough to last until January, and only a small portion of slips—he never commences hoeing until the vines have commenced running, and gives but one hoeing.

Mr. Joseph Palmer plants about the first of April, manuring at the rate of four hundred and eighty bushels of cowpen manure per acre. He prefers small beds, (that is of the size we have stated above) to those of larger sizes, and has known these to yield more than those made at a distance of five feet apart, and consequently much larger. For

planting he uses cut potatoes, as there is a saving of seed and the product about the same—the whole potatoes will, however, afford the earliest vines. In planting, two hands are employed, one covers the potatoes, and pats the earth firmly down, the other follows and draws earth from the opposite side, over the top of the bed and leaves it without being at all compressed, the effect of which is, that the tops of the beds are never baked into a hard crust, as is always the case when patted with the hoe, and thus left. In planting slips, he makes use of but three vines which are found amply sufficient.

The yam potato is the favourite in middle St. John's, and the Scotch or leather coat in upper St. John's. The "*reds*," (red skin and white flesh) which is planted in such large quantities on the sea-board, on account of their earliness as well as productiveness, are not planted in these parishes, except in small quantities for the use of children affected with bowel complaints, in which it is said to be found beneficial. All of the varieties of the potato are cultivated in these parishes in small quantities by some one or other of the planters.

To show that it is not so much a matter of indifference, (as many of our planters suppose) which variety is planted, we state the following facts:—on a piece of ground manured and cultivated alike, Mr. Isaac Porcher obtained from a row of one hundred and fifty feet long, of brimstone potatoes, (red skin and yellow flesh) four and a half bushels, whilst from an adjoining row planted with yams, he obtained but two and a half bushels. Dr. Ravenel planted several rows, droping the yam and Spanish pumkin alternately on the same rows. One row of one hundred and fifty feet in length produced two and three-quarters of a bushel of yams, and but two bushels of pumkin Spanish. Another row yielded two and one-eighth of a bushel of yams, and only one and three-fourths of pumkin Spanish. The like results would not, perhaps, follow on other soils, in fact, Dr. Ravenel has made on "*Poshee*," seven bushels of root yam potatoes to the row of one hundred and fifty feet, the very variety which produced comparatively so little in the experiment of Mr. Isaac Porcher. It was not from a single row only that this was made, but from a considerable space of ground. This shows the necessity of planters attending to the adap-

tation of the several varieties to their soil, and selecting for a crop those which prove most productive, without regarding any preference they may have acquired for particular varieties.

(*To be continued.*)

Art. LXXXI.—*On the Culture of Rice; by* J. Bryan.

(Continued from page 461.)

When the field is ready for planting, by being chopped and levelled, it is then trenched in the following manner. I select a few of the most intelligent and capable fellows, whom I denominate stake men; they put up stakes with great accuracy five feet apart, and mark out the entire field, making a trench of the proper depth and straightness on each stake row, which serves as a guide or pattern for the rest. The whole number of trenchers are then sub-divided into gangs of three; one of the smartest with two of the common hands task together; e best workman of the three makes his row or trench in the centre, between the stake rows, the two others follow him on his right and left, making their trenches between his and the stake rows, by which regulation the distance between the trenches and the depth is much more regular; the bad work of each hand is more easily detected, and the whole operation is more equally and neatly performed than when the entire gang work together; for then the slow or inferior workmen, must hurry, and the work is badly performed to enable them to keep up with the quick or more expert. Although you may have the same number of rows in the half acre, some will be thirteen inches apart, and others eighteen, some four inches deep, when others are but two, and the combined diligence of master, overseer, and driver cannot prevent it; the result of which inequality is more injurious than is generally believed. The rice in the deep trenches from being covered double the depth of the other

will be much longer in coming up, much of it will rot after it is sprouted, particularly in early planting, when the ground is cold, and in every hoeing much injury is done: the rice in the narrow alleys gets cut down and the ground is not half stirred, and much grass is left in the wide alleys.

I prefer very shallow trenching, just deep enough to give dirt sufficient to cover the rice from the birds, and prevent its floating when the water is put on. Rice that is covered deep never tillers as well as that which is covered lightly. I use the three inch trenching hoe as sold by Mr. Timmons and others: the trenches are fifteen inches apart from centre to centre, that is, one hundred and twenty rows to a half acre—the task is three quarters of an acre to each hand, except the stake men, who from the accuracy required of them, do only half an acre, that is to say, they are each required to trench a number of rows equal to one hundred and twenty rows of one hundred and fifty feet in length. When the field has not been dug up in winter, but merely hoed between the old rows a few days previous to trenching, each hand does his three quarters of an acre, has his task to himself, and is only required to make the trench of the proper depth and exactly in the centre between the old rows.

I always trench across the small ditches regardless of any geographical line, though I have heard some excellent planters say, that it is best to have the rows run north and south, with a view to the effect of the sun upon it, experience, however, has convinced me, that many advantages are derived from having the rows to cross the small ditches. Among the number are these—much of the putrid scum and slime that adheres to the stalks of rice, when the long-flow is let off, and which is very injurious to rice, passes through the alleys into the small ditches, and goes through the trunk into the river, whereas if the rows run parallel with the ditches, the current would draw across the rows and the scum cannot as readily be drawn into the ditches—the edges of the ditches are kept up better, and less ground is lost by planting in this way.

I plant two bushels of seed to an acre: the margins next the river being more injured by birds and rats, and low places in the field more liable to rot, are planted thicker.

I am supplied every year by a neighbour who plants inland swamp (stiff blue clay) with a small quantity of hand picked seed-rice, which is as free from red as rice can be, it is a heavy pearly grain entirely clear of chalk. This seed is planted in a field selected as the most free from volunteer rice, it is cultivated with great care and attention. The product of this seed field, (as we term it) makes my seed-rice for the following season. It may appear strange that I do not plant my whole crop with seed from inland swamp—from repeated experiments, I am satisfied that notwithstanding the best cultivation, and most prosperous seasons, the production is *never* as great the *first* year that inland seed is planted on our river lands as it is the second. It must be recollected that all my observations are confined exclusively to Cooper-river lands, which are the lightest black soil. I have frequently planted seed from North-Carolina, and some from the southward, but never discovered any advantage from either. Immediately before planting, the seed-rice is passed through the wind fan, and a sieve, to take out any light grains or grass-seeds that may be in it.

Great regularity is requisite in sowing rice, it is as injurious to have it too much scattered in the trench, as to be sowed too narrow or on the string, (as it is called) the trench being only three inches wide and planting two bushels of seed to the acre, it will admit of being scattered the full width of the trench. Two acres is the task for a sower, but, except she be experienced and the weather very calm, so much cannot be done in a proper manner.

The rice is covered by the women who use light wooden beaters—three quarters of an acre is the task, and it is the easiest work done on the plantation. Water is put on immediately after the rice is covered, and kept on deep for three or four days, during which time all the trash which has floated must be taken off. I have never used the point-flowing but twice, my land is not level enough to use it with advantage, the low places were much injured and I saw no benefit to the higher. If I planted *level clay* lands, I think I would invariably use it. As soon as the rice is large enough, say getting the fourth leaf, it is hoed pretty deep and a good sod turned over, a prime hand will do half an acre. If it be possible, I give a second hoeing before the water or long-flow is put on, that the sods may be per-

fectly pulverized and the ground thoroughly stirred. A day or two after hoeing, the water is put on deep for three days, then drawn down so that the points of the leaves will be an inch or two out of the water, make a mark on the trunk-stem or post, and let the water be kept precisely at the same depth until the rice grows through and becomes strong. At the end of fourteen or fifteen days, counting from the *first* day the water was put on, examine the roots of the rice, the best or only sure mode of ascertaining whether the plant is benefited or injured by holding on the water. If you find that it continues to put out new roots and to form tillers, the water may be continued on (frequently changing or freshening it) for *five*, *ten*, or even *fifteen* days. The roots must be frequently examined, and *immediately* as you discover that they are getting hard and cease to grow, run the water off, and while the field is yet very wet, hand-pick the rice, by pulling all the long grass out of it and laying it in the alleys: as soon as the field gets perfectly dry, hoe it pretty deep. Six or eight days after hoeing, examine the roots, if they are hard and dry, and the weather very hot without showers of rain, dash the field by letting in a tide or two so as to soak the ground well and then run it off; look to the roots again in a few days, if no new roots are put out, give a second hoeing, the rice will soon change colour and start to growing. As soon as you discover that the *stalk* of rice is putting out a new set of roots *above* the old, similar to those put out on the stalks of Indian corn, it is evident that the plant is about forming the *second* or ear joint, and *must instantly* have the water, for this is decidedly the most important crisis in making a crop of rice, nay, to obtain a full crop, it is a "*sine qua non*," to have your field *perfectly clean*, and a full command of *fresh* water at this time, inasmuch as the ear is now about to be formed, and will be either long or short, have many or few grains upon it, in proportion to the healthy or unhealthy state of the plant, and the quantum of grain can no more be increased by subsequent attention or good culture, than the sex in the animal creation can be changed after the formation of the fetus. The *quality* of the grain, I am free to admit, may, and, no doubt, is greatly improved by subsequent good management, but the *quantity* cannot be increased, though from bad culture or

unpropitious seasons it may decrease. The water should be put on somewhat deeper than the regular depth, (though not to cover the rice,) for two days, then bring it down to the regular standard depth at which it must be kept, although it should be freshened every two or three days, by letting some of the old water out and taking in fresh: some persons merely keep the regular depth of water by letting in fresh to make up for the evaporation and soakage. Rice will not do as well in this way as by changing the water.

The crop is now said to be laid by. The water is kept on until a few days before the rice is cut, with the exception of four or five days, when it is tight in belly or just ready to ear out. The object in letting off the water at this time is to make the whole field of rice ear out, and blossom, at the same time. The importance of this operation is obvious, for if the water is continued on, the ears of rice upon the main or original stalks blossom and mature sooner than those upon the tillers, the consequence is, that in harvesting, either the rice upon the main stalk is over ripe, or that on the tillers is not ripe enough—much loss resulting in either case. If the cat tail or any other long grass appears among the rice before it is full in belly, a few careful hands should be sent into the field to pull it up. The field being under water, the grass must be rolled up into balls and pushed with the foot under the mud in the alleys, but upon no consideration should any person be permitted to go into the field after the rice is full in belly.

I forgot to say that it not unfrequently happens when the long watering goes off, that the rice becomes very red, or as we term it, gets foxed, in which case some persons return the water upon it. This is a great error; keep the field very dry and stir the ground well with the hoe, twice within a few days if necessary, you will soon find it drop all the old red leaves, put out new heart blades, and, simultaneously, new roots and tillers are put out, whereas if the water is put on *before* this change takes place, the rice is very much backened, and *never* recovers in time to make a full crop, for the ear will be formed when the plant is sickly.

The proper time to cut rice is when the grains, about an inch from the bottom of the ear are ripe, for if you wait for the eight or ten grains at the bottom to be fully ripe, you

will most assuredly lose more than that quantity by its dropping from the top of the ear, and which is always the best grain.

Whenever a field of rice is to be flowed, the ditches should be well washed out, by letting in a tide or two and running it out dry, for, however, tight the trunks may be, much stagnant and putrid water, with slime and moss will be collected in the ditches, and is very injurious if allowed to go on the rice.

(*To be continued.*)

LXXXII.—*On the Treatment of the Cholera Asphyxia; by* WILLIAM CANNING, M. D.

The following letter on the Cholera may at first view appear to be out of place in a work devoted almost exclusively to agriculture, but the interest of the Southern Planter is the object we have in view, and whatever can benefit him, comes fairly within our limits. The slave population is one of the sources of our wealth, and did not humanity, yet would our interest prompt us to take every precaution to prevent the approach of this dreadful scourge, and to be prepared, to meet it should it unfortunately visit us. It will be impossible for us to obtain the aid of physicians on our plantations in such a case, and each planter will therefore be obliged to act in that capacity, to a certain extent. It, therefore, becomes a most interesting inquiry what course is proper to be persued in such an emergency. Our physicians being unacquainted, except by the writings of others, with this disease, and, consequently, extremely loth to venture an opinion at present, as to what ought to be done, our only resource, is in following such prescriptions as have proved successful in other places. We have anxiously watched the result of these as far as could be ascertained, but although several have come highly recommended, yet none we have met with, equals in simplicity and success the camphor treatment detailed below, and we strongly recommend it to such of our friends as cannot call in a physician to their aid. In order to obtain all the information from fountain head, for the use of our friends, we addressed a letter to Dr. Channing, to which the following is an

answer, and which will no doubt prove highly interesting to them. For his politeness and promptness in answering it, we beg of him to accept our sincere thanks.—*Ed. So. Agr.*

"New-York, September 3, 1832.

Dear Sir,—Your letter of the 26th ult. I have received, and for a reply to its principal inquiry, I must refer you to the papers published in the *New-York Courier and Enquirer* of the 31st of July and 1st of September, respectively, which you will receive by this mail.

For your individual satisfaction, and that of your friends, (for I do not feel at liberty to sanction its publication) I inclose a copy of a letter from my friend Dr. De Kay, in which you have the results of his extensive observations of the treatment of Cholera in Smyrna, Constantinople, Canada, and this city.

In reference to the camphor treatment, I maintain its superiority to others yet publicly known, in every stage of the malady.

1st. It is so simple that it may be applied with little difficulty to the large majority of cases, by an intelligent nurse; and hence it is peculiarly suited to a disease in which the loss of time in procuring medical aid, often proves fatal to the patient.

2d. It is adapted to cases in which most other plans are inadmissable, as those wherein calomel, opium, bleeding, &c. cannot be safely exhibited.

3d. It is attended with less inconvenience to the patient, and a less dangerous and less protracted convalescence.

4th. It is more manageable, being easily adapted at every period, to the circumstances of each particular case then present.

5th. In efficacy, it yields to none in any stage—and in that of Asphyxia, it claims precedence of all, provided it has not to contend with the complication of previous medication.

6th. If the last position be true, (and comparative observations of the favourite plans pursued here, allow me not to doubt it) it follows that it is to be preferred in the first stages as well as the last; for, other modes failing in those, as they must do more or less, necessarily render the success of camphor in Asphyxia, very precarious, especially if opium shall have entered into the unsuccessful medication.

These, Sir, be assured, are not the views of one wedded to a favourite theory; nor of one who claims the paternity of a popular practice. In the one respect, I have publicly disclaimed originality, and in the other, it is manifest that I assert only facts demonstrable or refutable; facts in which at this period, humanity has too sacred an interest to permit in any consciencious inquirer, either partial or careless observations.

Before concluding this letter, permit me to add a few remarks on prophylactic regimen. You, doubtless, are aware of the doctrines of *temperance*, as they have been improperly termed, promulgated here under the sanction of high authority. I say "improperly termed," because temperance implies moderation, not *intemperate abstinence*, as most certainly is that mode of living which, inadequate to the wants of the system, suffers its native vigour to languish. Such a course must necessarily impair its power of resisting deleterious agents of every kind, and especially epidemic influences. Moreover, in relation to the existing epidemic, it is incontrovertible that wherever it prevails, *whatever tends to depress the vital energies of the human system, is active in producing Cholera.* A simple enumeration of admitted causes, will place this position in its true light. They are, anxiety, fear, grief, excesses of all kinds, in eating, drinking, fatigue, &c., exposure to cold, moisture, and impure air, personal filthiness, previous sickness, old age, &c. &c. Now these causes are of a definable nature, and many of them easily avoided—but there is one, more occult, of universal influence, and not to be eluded. It is the mysterious agent which, aided by one or more of the above named causes gives existence to epidemic Cholera. It indicates its presence to every human being within its scope, at least by a sense of enfeebled powers, an indisposition to active exertion, analogious to that experienced after suffering the heat of a protracted summer. It is then a condition predisposed to Cholera, and to be counteracted only by a diet *more generous* than the ordinary condition demands; a diet consisting of more animal food, bread instead of innutritious vegetables, pure wine, and even brandy, where habit, fatiguing exertions, indisposition, or other circumstances demand their aid in sustaining the system under this unaccustomed burthen—intemperance on the one hand, and on the other, being cautiously avoided.

That this, Sir, is the just medium in diet to be observed by all who would avert, as far as practicable, the predisposing causes of Cholera, facts in this city have most amply demonstrated; and I submit it to your judgment, if common sense, apart from experience, does not so emphatically assert the same truth, that, but for the many similar absurdities, we might be left to wonder whence the error here exposed, could have originated.

With great respect, I am, your very obd't. serv't.

WILLIAM CHANNING, M. D.

The following is the mode of Treatment referred to by Dr. Channing.

"*German or Camphor Treatment of Cholera Asphyxia.*—The following comprehensive directions, intended to meet, in some degree, the exigencies of those who desire information relative to the use of Camphor in the treatment of Cholera, are essentially a summary of the practice of several physicians of New-York, and now sanctioned by their experience in more than six hundred cases, many of them of the most malignant character. If they shall prove instrumental in lessening the destruction attending the pestilence now ravaging our country, the writer's design will have been answered.

"It is necessary to premise, that in specifying measures *generally efficacious* in cases as they have arisen, it is hardly possible in a single sheet, even to touch upon the principles upon which the practice is founded; and still less to enumerate the various circumstances of age, sex, constitution, &c. of the patient, and the diversified phenomena of the disease, that, as in other diseases, require correspondent modifications of the treatment—modifications which it is manifest, must be left to the professional *tact* of the intelligent physician.

"Another remark too important to be overlooked is, that there have already been observed no less than six different forms of epidemic cholera, each having its characteristic features, and each its appropriate treatment. Several of these may prevail, according to laws not ascertained, during the same season, in different countries or districts, as noted in Europe in its late desolating progress.

"It must, therefore, be explicitly understood, that the practice here set forth is designed only for an epidemic exhibiting the same distinctive features as have marked the foot steps of cholera in this city; and that, in such an epidemic, cases may be expected in which the *literal adherence* to directions *necessarily general*, may prove pernicious and even fatal. Moreover, it must be constantly borne in mind, that, throughout the several stages of this disease, from the first premonitory symptoms to confirmed convalescence, it is essential to success of the camphor treatment, that *the patient be free from the counter influence of other medicinal agents*;* and that, of all others, none is so utterly opposed to its efficacy, none so fatal to every hope of a favourable issue, as *Opium in every form* in which it is administered

"To avoid repetition, it is thought expedient to present the treatment of the several stages of Cholera in a reversed order, commencing with that in which its appaling symptoms are most strikingly developed.

"*The Stage of Asphyxia.*—In this stage, if the collapse shall have long existed, or if the march of the disease shall have been unusually rapid, the evacuations

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* This remark requires the qualification that there are cases of occasional occurrences, in which according to circumstances to be recognized only the skilful physician *Cuprum*, *Veratrum*, *Rhus* and *Bryonia*, are called for and exhibited with the greatest advantage.

so excessive that the patient appears nearly exsanguinated, the pulsations of the carotids and of the heart remarkably feeble and the respiration very laborious—but little hope can be indulged under any treatment. Such patients, however, have in some instances, been resuscitated by the judicious exhibition of camphor—the doses being diminished to about one fourth part, and repeated every three, four or five minutes, and the other measures hereafter detailed faithfully enforced. But the majority of collapsed patients, when first seen by the physician, happily have not yet sunk to the above discouraging condition; and though the pulse at the wrists shall have ceased, the extremities and face shall be blue and shrivelled, and with the tongue and breath evince no vital heat, if there be ordinary constitutional stamani, it is in such cases that the camphor treatment exhibits most convincingly its *specific* powers; for in such cases, if experience be the test, it is entitled to a confidence that can be claimed by no other yet promulgated.

"1st. The patient should be immediately undressed and well covered in bed and woollen stockings placed upon his hands and feet. 2d. Three drops of the spirits of camphor* in a table spoonful of water, or (what is equivalent and of more convenient administration) a table spoonful of camphor mixture† should be forthwith administered and repeated every fifteen minutes. 3d. An injection warm as can be borne, of the camphor mixture somewhat less than half a pint, every half hour, or oftener if not retained. 4th. The abdomen and chest should be covered with flannel wet with camphor spirits—the limbs above the stockings rubbed with it, and the bed clothes about the patient's head so sprinkled with it that camphor may be inhaled with every breath. 5th. The extreme thirst should be allayed with a table spoonful of cold water, or pure brandy and water *very weak*, as the patient may prefer, every five or ten minutes.

"These measures should be unremitting until pulse and warmth be restored to the extremities, when the injections (and the frictions, if no cramps be present) may be discontinued. The *full dose* of camphor must be maintained until free perspiration becomes general, and the evacuations comparatively infrequent; then they are to be promotly reduced to *one drop* of the spirits or *a teaspoonful* of the mixture. So soon as the evacuations are small and rare and begin to evince a bilious tinge, (as is often the case at an early period,) the *intervals* should be extended to 20, 30 or 60 minutes according to the degree of heat and perspiration, and thus continued until the watery discharges shall have wholly ceased. After this occurrence, most patients require the repetition of the one drop every two or three hours; but in some, this small dose, once in four, six and even twelve hours, proves abundant for the continuance of active perspiration, while *the hazard of over excitement and depressing narcosis*, is thus with ease avoided.

"The sweating process in this manner, fully though cautiously sustained, is to be pursued in collapsed cases at least thirty-six hours, every exposure which may arrest its salutary influence being carefully avoided. In the course of it, the insatiable thirst gradually ceases, and the patient after a little light nourishment two or three times, generally will relish, and in moderation will take with great advantage, every three or six hours, beef-steak, mutton-chop, or boiled chicken, with good stale wheat bread; and for drink, brandy and water, and pure Port and Sherry wine. These articles should constitute the principal diet of the convalescent, whose *decidedly expressed wants*, as the utterings of nature not to be disregarded, should be indulged, yet with great tem-

* The Spirits of Camphor referred to, is that of the L. and D. P. or Camphor (2 oz.) two ounces, dissolved in Alcohol, a pint.

† The Camphor mixture may be extemporaneously prepared by adding to a common black bottle of warm water, three tea spoonsful of the spirits, to be shaken for a few moments, then strained through a coarse napkin to remove the undissolved camphor.

perence. Experience has amply shown, that by management so simple, convalescents, after severe attacks of cholora, may with very few exceptions, be safely conducted through its consecutive dangers to confirmed health; always, however, (peculiarly predisposed, as they must be in their debilitated state, to renewed attacks) requiring the reiterated admonitions of their physicians to unceasing vigilance.

"*The Cramp or Spasmodic Stage.*—This stage ordinarily precedes that of collapse; in many instances runs into it and like it, is often accompanied by profuse evacuations fits of vomiting, cold extremities, &c. If the sufferings be very severe and collapse threatened, it calls for treatment as active as that just detailed, the frictions being vigorously applied to the seat of the cramps. If vomiting be a predominant system, the precordia should be rubbed with the camphor spirits and only *one drop* in a tea spoonful of water administered every three or five minutes; if repeatedly rejected let a like quantity be diffused through three, six, or even ten times the water, and given by the tea spoonful till a larger dose shall be retained. By this mode of exhibition, camphor never fails to overcome the most violent vomiting occuring under this epidemic, after which no difficulty exists in pursuing the course directed in the stage of Asphyxia In case the attack be of a milder nature, warm perspiration will speedily appear and the symptoms vanish under treatment less active.

"*The Premonitory Stage.*—It is generally indicated by one or more of the following symptoms—lassitude, ringing in the ears, chilliness, uneasiness or soreness in the region of the stomach, nausea, occasional vomitings, costiveness, diarrhea, pains in the bowels, slight cramps particularly in the fingers and toes, &c. Unless severe in the outset or too long neglected, the patient rarely finds it necessary to leave his ordinary avocations, though in cool or damp weather he may require an extra garment. To obviate costiveness, a mild injection, daily if required, is the safest means to be used when the bowels are so easily irritated into violent diarrhea as during the prevalence of cholora. If *any laxative be taken*, castor oil, in the dose of a tea spoonful, with three drops of campor spirits, repeated in an hour or or two if it fails to operate, is to be preferred. In reference to the other symptoms of this stage, the same dose of camphor, repeated if requisite in an hour, or if they be urgent in half an hour, or a quarter even, will almost invariably arrest any and all of them. Should they, however, obstinately persist, the patient must submit to the inconvenience of a free perspiration in bed for a few hours The importance of *promptly* applying the remedy for the symptoms of this stage and thus nipping the disease in its bud, cannot be too strenuously urged upon every individual exposed to this epidemic.

"The practice above designated, can hardly be more at variance with any of the prevailing views of medical men, than with those entertained, but a brief period since, by the writer himself. In this age of generalizing, he had been led to doubt the existence of a *specific* for any disease. Experience, the only unerring guide, has convinced him of an error that has but too many adherents, and to propagate its correction is but justly due to the interests of sound philosophical medicine.

"To have imagined that the introduction of camphor as a specific for a disease so formidable as cholera, would escape an opposition as violent, if not so formidable, had argued gross ignorance of the history of improvement in every department of human knowledge. He who is aware that in enlightened Europe the virtues of Ipecacuana and Peruvian Bark remain untested, and the unequalled blessings of the potato unappreciated, until the stamp of *royal* patro-

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* *Vide* in a *Ladies' Gazette*, "The New-York Mirror" of this week, a "Letter on Cholera Asphyxia" from a late learned Professor, in which various modes of treatment are canvassed. If the amiable author utters his dicta in reference to other modes, with *the same amount* of knowledge, as that he evinces of the camphor treatment, the public will know *how* to appreciate his elaborate production.

nage opened the eyes of the blind, can scarcely feel surprise at what he witnesses in the present instance.*

"But facts are daily accumulating, which, as they become known, must carry conviction to every understanding accessible to truth. To such—to *such alone*, the writer would appeal for an impartial trial of the practice he would promulgate. And he makes this appeal with the most unwavering confidence, (a confidence resting upon an extensive knowledge of facts in private and in public practice,) that such a trial cannot fail to demonstrate the pre-eminent simplicity, safety, and certainty of the camphor treatment of Cholera Asphyxia, as well as the acumen of German research which first devised it.

WILLIAM CHANNING, M. D.

New-York, Aug. 30, 1832.

Although this disease is most formidable, when it has passed to the second and third stages, yet our physicians generally agree, that if the prononitory symptoms be attended to, it is perfectly under control. The most usual symptom is diarrhea, and this on no account should be neglected, but on the first appearance be attended to. Several cases of common diarrhea, which have yielded to the camphor treatment, have come within our own knowledge, some of them violent.

The second communication referred to by Dr. Channing, contains an account of two cases treated by him with camphor, they are two long for insertion here—from the latter part of it we extract the following:—

"Defeated in this attempt in a public Hospital to convince the profession, and through them, the community at large, that camphor *in small doses*, administered judiously, *according to circumstances*, is a specific for *every symptom* of the epedemic prevailing in this city, the writer turned his attention to private practice to furnish the testimony necessary for this purpose. This testimony is now available; and, exclusive of his own practice, which may be considered *ex parte*, more than two hundred individuals can now be referred to in this city, with their address, who have been attacked with cholera, (many of them violently, and many in the blue or colapsed stage,) and subjected to the camphor treatment. Of the whole number of cases thus treated (if three be excepted who had previously been drugged with opium into the arms of death) only *four* have died.

Let it not be imagined that the validity of this statement rests upon the assertion of one or ten individuals. It is a statement which courts the investigation of every unprejudiced mind, and which will be sustained by the voices of at least five hundred impartial witnesses of the efficacy of the camphor treatment. Let those who doubt, and who are affected with any of the usual premonitory symptoms, make trial of *one* to *three drops only* of the *unmixed* spirits of camphor in a little water, repeated at intervals of an hour, or two, for a few hours only, carefully avoiding improper diet, all other medicine, and especially *every form of opium*, and experience may convince them that cholera in this stage is readily obviated without the aid of a physician."

ART. LXXXIII.—*Queries to Rice Planters; by* AN OBSERVER.

Mr. Editor,—1. I beg leave to inquire through you, of the experienced and judidious rice planters, whether it is not observable on drawing off the water after each flowing of their fields from tide water, that a considerable deposit of mud remains on the surface of the field?

2. Whether the mud is not considered fertilizing and advantageous to the field?

3. Whether such additions of mud are not more especially beneficial to rice-fields of light vegetable mould, and to those of a sandy nature, by the addition and mixture of loam with such light soils?

4. Whether they flow their fields occasionally through the winter with the especial object of intercepting and obtaining, as many as possible, of such deposits of mud?

5. Whether flowing the fields occasionally with brackish water in the winter, will not improve the soil by the slight addition of salt as well as of mud?

6. Whether these advantages may not be obtained simply by instructing the trunk-minder to flow the field at every full and new moon, and to draw off the water after one week?

7. Whether this plan would not effectually sprout and rot all the loose ears and grains of rice, that may have fallen in the field, so as to prevent the mixture of red rice?

8. Whether by this alternate flowing and exposure, the seed of different grasses, which now cause so much labour to keep the crops clean, would not be sprouted and rotted as surely as the grains of scattered rice?

9. Whether a field, so flowed, would not have the stubble sufficiently rotted to render burning unnecessary in the spring?

10. Whether if so flowed one week and exposed during the next week, alternately, throughout the winter, the soil would not be sufficiently soft and mellow to admit of trenching and planting between the rows of the proceeding year, without the necessity of hoeing the whole field as usual?

11. Whether by a continuation of this simple process, the produce of the field may not be increased from fifty to

seventy or eight bushels per acre, with a corresponding improvement in the size, weight, and quality of the grain?

12. Whether more acres may not be planted to the hand, or much time saved for other valuable purposes, by some such management?

13. Whether the rice is not most apt to grow rank or tall, and therefore, lodge or fall in new and strong land? May not this be prevented by a proportionate increase in the number of rows in each task? On the principle of planting corn, &c. in rich river bottoms, will not the length of the stalks be reduced by increasing their number in proportion to the strength of the land? Will they not by being nearer together afford more support to each other, yield greater crops and be less subject to accident?

AN OBSERVER.

PART II.

SELECTIONS.

Art. LXI.—*The Dairy.*

[FROM THE LIBRARY OF AGRICULTURAL AND HORTICULTURAL KNOWLEDGE.]

(Continued from page 485.)

IV.— *Process of Cheese Making.*

The production of cheese embraces the following particulars:—1. The season. 2. Periods of milking, and the qualities of the milk. 3. Preparation of the rennet. 4. The choice of colouring matter. 5. The setting, breaking, and gathering of the churd. 6. Management of the cheese in the press, manner of salting, and management in the cheese-room.

1. The Season.—The best season for making cheese is when the cows can be fed in the pastures, from the beginning of May until the end of September. In Gloucester the season continues from April till November, May and June being the principal months.

2. Periods of Milking and Qualities of the Milk. The times at which milking is performed in Cheshire, during summer, is at six o'clock, morning and evening; during winter, as soon as light, and before dark commences. It Wilts and Suffolk it is begun by four in the morning, and therefore over before the heat causes the cow to become restless and uneasy. The milk should be put into pans immediately, that it may be expeditiously cooled.

The goodness of the cheese depends principally on the richness and quality of the milk. A one-meal cheese is so termed when the whole of the produce of one milking is employed, in its simple state, for the production of the cheese; but sometimes the cream, either wholly or in part, is removed from the first milking or meal, and blended with the whole produce of a second milking, and a cheese thus obtained is termed a two-meal cheese.

The operation of cheese making commences after the morning's milking is completed. To make cheese of the best quality, and in the greatest abundance, the cream should remain in the milk. Where two milkings are put together, the cream of the

evening's milk is skimmed off, and the milk put into the cheese tub, reserving some proportion to be made scalding hot; one half of which is poured into the cheese tub, among the cold milk, and the other into the pan where the cream is put; these being incorporated, the whole is poured into the cheese tub, where the morning's milk is put, warm from the cows, when the rennet is applied in the usual manner.

3. Preparation of the Rennet.—The stomach of all animals secretes a fluid, which is called the gastric juice, which possesses the property of converting milk into curd and whey. What is known, therefore, as rennet, is nothing more than the stomach of a calf, in which the gastric juice is preserved by a process which we are now about to detail.

Three pints or two quarts of soft water, mixed with salt, wherein is put sweet briar, rose leaves and flowers, cinnamon, cloves, mace, and almost every spice and aromatic that can be procured, are to be put into two quarts of water, and made to boil gently, till the liquor is reduced to three pints, and care should be taken that it is not smoked. Strain it clear from the spices, &c. and when of the same temperature as milk taken from the cow, it is to be poured into the bag or maw. A lemon may then be sliced into it, and suffered to remain a day or two; after which, the whole should be strained again, and bottled for use; it will keep for twelve months or more. It will smell like a perfume, and a small quantity of it will turn the milk, and give the cheese a pleasing flavour. If the maw be salted and dried for a week or two, near the fire, it will answer the same purpose again almost as well as before.

Thoughout the whole process of preparing and preserving rennet, too much attention cannot be given to its cleanliness and sweetness, for if it be kept too long, so as to become foul or tainted, the cheese will invariably become affected by it, and will prove unfit for use. The quantity of rennet to be employed can only be ascertained by practice, but upon an average, about a third of a pint, wine measure, will be sufficient for fifty gallons of milk.

4. Choice of Colouring Matter.—Spanish annato is unquestionably the best ingredient for colouring cheese, half an ounce of which is sufficient for half a hundred weight of cheese. The annatto, dipped in milk, may be rubbed on a piece of smooth stone, and then mixed with the milk in the cheese tub, previously to applying the rennet, and should be well stirred about, so as to be thoroughly diffused through the milk.

5. The Setting, Breaking, and Gathering the Curd.—1. Setting of the Curd.—It is known, from daily experience, that the warmer the milk is when the rennet is put to it, the sooner it will coagulate. It is equally well known, that the cooler the milk and the longer it is in coagulating, the more tender and delicate

the curd becomes; on the contrary, if the milk be too hot, and the coagulation takes place too rapidly, the curd proves tough and harsh. But it seems to be a fact well established, that a cheese made from milk which has been coolly and slowly coagulated, is longer before it comes marketable, than one made from milk which has undergone deliberate coagulation; and which, being drier and of a harsher texture, sooner becomes cheese, and fit for the taster. Therefore the great art in this stage of the process lies in the degree of warmth of the milk when set; and this, when the rennet is put to it; and this can only be correctly ascertained by the use of the thermometer. According to Marshall, from 85 to 90 degrees of heat, and a period of two hours, are the fittest for coagulation. This period, however, must vary according to the season, climate, and pasture on which the cows are fed. Milk produced from poor pastures require a higher degree of heat to affect coagulation than that obtained from richer pastures. Milk can always be brought to proper temperature, adding boiling water, till the thermometer indicates the requisite degree of heat for the reception of the rennet.

2. Breaking and Gathering of the Curd.—The curd is at first cut or broken in various directions, with a cheese knife, to make the whey separate easily, without carrying off the richness of the curd; the broken curd is then allowed time to subside; after this, the knife is used more freely, and the unbroken curd stirred up from the bottom. The whey is then taken off with a skimming dish, the curd collected into a mass, and squeezed with the back of the skimming dish; it is then cut and pressed with the hands as hard as possible, or a weight may be applied. It is afterwards distributed into two or three pans, and broken with the hands as fine as possible, and a proper quantity of salt sprinkled over it. When it is properly broken, rubbed, and salted, a cloth is spread over the cheese vat; and the broken curd being packed into it, and covered up with the cloth, a board is laid over the vat, and a weight, heavy in proportion to the quantity, placed upon it, by which means the remaining whey is pressed out.

When the vats are large, a number of iron skewers are thrust through the sides, where, upon being withdrawn, they leave drains for the whey to run off. When that has almost ceased, so as to scarcely drop, the weight is taken off and the curd is rebroken, and then placed again in the vat as before, and repeated, with a clean cloth spread over for the purpose of receiving it, while a drop of whey can be extracted.

6. Management of Cheese in the Press, Manner of Salting, and Management in the Cheese-room. 1. Management in the Press. When the vat is placed in the press, and the weight put on, skewers are used frequently in the course of the day, as before described; after the vat has remained in the press for two or three hours, the cheese is taken out and put into warm or hot whey

for an hour or two to harden its coat, it is next taken out and wiped dry, when it is again put in the vat and then into the press. Towards evening it is again taken out of the press, another clean dry cloth put on, then placed in the vat upside down, repeating this twice for two days, when it is finally removed.

2. Manner of Salting.—This is generally done during the pressing, by well rubbing the cheeses, each time they are taken from the vats, with salt. Large cheeses are placed into a tub where there is plenty of brine, and remain for several days; being, however, turned daily. The cheeses are then removed to the salting bench, and are carefully rubbed over daily with salt, for eight or ten days; at the expiration of which time they are washed in warm water or whey, dried with a cloth, placed on the drying bench, and finally removed to the cheese-house.

3. Management of the Cheese-room.—The processes of salting and drying being completed, the cheeses are smeared over with butter, and then deposited in the cheese room, should be both dry and airy. For the first eight or ten days the cheeses should be smartly rubbed and the butter repeated. After that period two or three times a week will be sufficient, turning them every day. To hasten the cooling and maturity of the cheese, the temperature of the room should be warm.

(*To be continued.*)

Art. LXII.—*On the General Management of the Horse.*

[FROM THE LIBRARY OF USEFUL KNOWLEDGE.]

(Continued from page 493.)

Litter.—Having spoken of the vapour of the hartshorn, which is so rapidly and so plentifully given out from the urine of a horse in a heated stable, we take next into consideration the subject of litter. The first caution is frequently to remove it. The early extrication of gas shews the rapid putrefaction of the urine; and the consequence of which will be the rapid putrefaction of the litter that has been moistened by it. Every thing hastening to decomposition should be carefully removed where life and health are to be preserved. Every portion of the litter that has been much wetted, or at all softened by the urine, and is beginning to decay, should be swept away every morning: the great-

er part of the remainder may then be piled under the manger, a little being left to prevent the painful and injurious pressure of the feet on the hard pavement during the day. The soiled and macerated portion of that which was left should be removed at night.

No heap of fermenting dung should be suffered to remain during the day in the corner or in any part of the stable. With regard to this, the directions of the master should be peremptory.

The stable should be so contrived that the urine shall quickly run off, and the offensive and injurious vapour from the decomposing urine and the litter will thus be materially lessened: if, however, the urine be carried away by means of a gutter running along the stable, the floor of the stalls must slant towards that gutter, and the declivity will sometimes be so great as to strain the back sinews, and become an occasional, although unsuspected cause of lameness. Mr. R. Lawrence well observes that 'if the reader will stand for a few minutes with his toes higher than his heels, the pain he will feel in the calves of his legs will soon convince him of the truth of this remark. Hence, when a horse is not eating, he always endeavours to find his level, either by standing across the stall, or else as far back as his halter will permit, so that his hind legs may meet the ascent of the other side of the channel.'

This direction of the stall is also a frequent cause of contraction of the heels of the foot, by throwing too great a proportion of the weight upon the toe, and removing that pressure on the heels which tends most to keep them open. Care, therefore, must be taken that the slanting of the floor of the stalls shall be no more than is sufficient to drain off the urine with tolerable rapidity. Stalls of this kind certainly do best for mares; but for horses we much prefer those with a grating in the centre, and an inclination of the floor on every side towards the middle. A short branch may communicate with a larger drain, by means of which the urine may be carried off to a reservoir outside of the stable. Traps are now contrived, and may be procured at little expense, by means of which neither any offensive smell nor current of air can pass through the grating.

The farmer should not lose any of the urine. It is from the dung of the horse that he derives a principal and the most valuable part of the manure. It is that which earliest takes on the process of putrefaction, and forms one of the strongest and most durable dressing. That which is most of all concerned with the rapidity and the perfection of the decomposition, is the urine.

The reasons why the horse should always stand on litter have been given. Humanity and interest, as well as the appearance of the stable, will induce the general proprietor of the horse to place a moderate quantity of litter under him during the day.

The farmer who wants to convert every other useless substance into manure will have additional reason for adopting this practice; especially as he does not confine himself to that to which in towns and in gentleman's stables custom seems to have limited the bed of the horse. Pea and bean-haum, and potato-tops, and heath, occupy in the stable of the farmer, during a part of the year, the place of wheaten and oaten straw. It should, however, be remembered, that these substances are disposed more easily to ferment and putrefy than straw, and, therefore, should be more carefully examined, and oftener removed. It is the faulty custom of some farmers to let the bed accumulate until it reaches almost to the horse's belly, and the bottom of it is a mass of dung. If there were not often many a hole and cranny through which the wind can eater, and disperse the foul air, the health of the animal would suffer.

Light.—This neglected branch of stable-management is of far more consequence than is generally imagined; and it is particularly neglected by those for whom these treatises are principally designed. The farmer's stable is frequently destitute of any glazed window; and has only a shutter, which is raised in warm, and shut down in cold, weather. When the horse is in the stable only during a few hours of the day, this is not of so much consequence; nor of so much, probably, to horses of slow work; but to carriage horses and hackneys, so far at least as the eyes are concerned, a dark stable is less injurious than a foul and heated one. To illustrate this, reference may be made to the unpleasant feeling and the utter impossibility of seeing distinctly, when a man suddenly emerges from a dark place into the full blaze of day. The sensation of mingled pain and giddiness is not soon forgotten; and some minutes pass before the eyes can accommodate itself to the increased light. If this were to happen every day, or several times in the day, the sight would be irreparably injured; or possibly, blindness would ensue. Can we wonder, then, that the horse taken from a dark stable into a glare of light, and feeling, probably, as we should do under similar circumstances, and unable for a considerable time to see anything around him distinctly, should become a starter, or that the frequently repeated violent effect of sudden light should induce inflammation of the eye, so intense as to terminate in blindness? There is, indeed, no doubt that horses kept in a dark stable are frequently notorious starters, and that starting has been evidently traced to this cause.

Farmers know, and should profit by the knowledge, that the darkness of the stable is not unfrequently a cover for great uncleanliness. A glazed window, with leaden divisions between the small panes, would not cost much, and would admit a degree of light somewhat more approaching to that of day; and, at the

same time, would render the concealment of gross inattention and want of cleanliness impossible.

If plenty of light be admitted, the walls of the stable, and especially that portion of them which is before the horse's head, must not be of too glaring a colour. The constant reflection from a white wall, and especially if the sun shines into the stable, will be as injurious to the eye as the sudden changes from darkness to light. The perpetual slight excess of stimulus will do as much mischief as the occasional, but more violent one, when the animal is taken from a kind of twilight to the blaze of day. The colour of the stable, therefore, should depend on the quantity of light. Where much can be admitted, the walls should be of a grey hue. Where darkness would otherwise prevail, frequent whitewashing may in some degree dissipate the gloom.

For another reason it will be evident that the stable should not possess too glaring a light. It is the resting-place of the horse. The work of the farmer's horse, indeed, is confined principally to the day, but the labours of others are demanded at all periods. The hour of exertion having passed, the animal returns to his stable to feed and to repose, and the latter is as necessary as the former, in order to prepare him for renewed work. Something approaching to the dimness of twilight is requisite, to induce the animal to compose himself to sleep. This half-light more particularly suits horses of heavy work, and who draw almost as much by the weight of carcass which they can throw into the collar, as by the degree of muscular energy of which they are capable. In the quietness of a dimly-lighted stable they obtain repose, and accumulate flesh and fat. Dealers are perfectly aware of this. They have their darkened stables in which the young horse, with little or no exercise, and fed upon marshes and ground corn, is made up for sale. The round and plump appearance, however, which may delude the unwary, soon vanishes with altered treatment, and the animal is found to be unfit for hard word, and predisposed to every inflammatory disease. The circumstance, then, under which a stable somewhat darkened may be allowed, will be easily determined by the owner of the horse; but, as a general rule, dark stables are unfriendly to cleanliness, and the frequent cause of the vice of starting, and of the most serious diseases of the eyes.

(*To be continued.*)

Art. LXIII.—*On the Economical Management of Farm Yard Manure.*

[FROM THE BRITISH FARMER'S MAGAZINE.]

"Everton, February 7, 1832.

Sir,—I made a proposal to the committee of the Liverpool Agricultural Society, of which I have the honour of being a member, to grant a premium to the owner or occupier, of any farm in our district who shall construct a middenstead, or receptacle for manure, upon the most approved principle, considering that it would be a very great advantage to farmers who purchase manure, to have a place in which they could keep it without waste. Being thus provided, they might purchase when the article was cheap, or at such times as their teams were most at leisure to cart it home. My ardour was somewhat damped by the reception which my observations met with from one or two individuals then present, but nevertheless, I intend to renew my application to my brother committee-men.

For many years I occupied a farm at Maghull, about seven miles from Liverpool, and from my observations there, during those years, I was led to conclude that the farmers, to a man, wasted their manure to the extent of one-half of all they produced upon their farms, and I believe this to be generally the case throughout the north of England. Conviction was strongly impressed upon my mind by the following occurrence. I had set about eight acres out of nine, of which the field consisted, with potatoes, when I found that the manure was finished which had accumulated in my farm-yard. I consequently despatched carts to Liverpool, and purchased horse manure, out of a very deep middenstead, in a confined situation, which was rendered compact by the trampling of pigs which had been constantly kept upon it, and moist from their urine; in short, it was what the farmers call in a green state, that is to say, it was not rotten. The remainder of my potatoes were planted upon this ninth acre, with this Liverpool manure, and the same quantity was put into the drills as had been used of my own manure in the eight acres before mentioned, acre for acre or drill for drill.

My crop upon the acre set with the manure from Liverpool was double the quantity of potatoes to any other acre in the field. There was not any superiority in the quality of the land in one part of the field over any other part—it was all alike. Neither was their any difference in the *original* quality of the manure. My own was horse dung, and my horses had eaten as much corn as the Liverpool horses. I had had pigs also running upon my midden. But the difference when the manure came to be used, consisted in this, namely, my farm-yard was large, and whenever

any manure was thrown out of the stables it was spread over much space, and exposed to the open air and sun; whereas the Liverpool manure was kept in a place almost as confined as a vault, below the surface of the ground, with high walls round it, so that neither sun nor wind could get at it. This, I am convinced, was the sole cause of the Liverpool manure having so much greater an effect upon the crop of potatoes than that which was taken out of my own farm-yard. I consequently made other trials with similar results; for instance, where I put *only half the quantity* per acre of cow dung from a vault in Liverpool, that I put of cow dung made from my own cattle, and thrown into an open yard, or rather, put into a heap, into a hollow place scooped out for the purpose, I had quite as good crops of roots from the former as the latter. I must here observe that my manure had been made by cattle which were stall fed with turnips, mangel wurtzel, and bean flour, with a moderate proportion of hay, so that no milk cows in Liverpool had better diet. I must not omit to mention, that the effect of the Liverpool manure was very visibly beneficial to the subsequent crops of wheat in both the before named instances. I need hardly say, that manure which is made by animals highly fed, is superior in quality to that which is produced when they are poorly kept; but I must remark, that the better the quality of manure the more it loses by evaporation when exposed to the action of the air. Even though formed into large heaps, for instance, of one hundred tons, it wastes exceedingly in the field, particularly during the drying winds of March; yet you will frequently see farmers practise the plan of carting the manure into a field, which is to be sown with turnips or planted with potatoes, some weeks, or perhaps months, before it is to be used; and some of them will even turn over the heap that it may become more thoroughly rotten, as though, like the withered leaves of trees or potato tops, it would not decay quickly enough in the ground. If any will take pains to weigh a quantity of good horse or cow manure, but particularly the former, when first taken out of a midden-stead where little or no evaporation has taken place, put this manure into a heap in the field, let it lie a fortnight, or thereabouts, then turn it over and suffer it to rot for another fortnight, and lastly weigh it over again, he will find that the manure will have lost one-half of its weight; but it is still more worthy of remark, that the best part, viz. the ammonia, will have escaped into the atmosphere. To spread this kind of manure upon the surface of the land as a top dressing, there to let it remain exposed to the sun and air, is a still greater waste, although the practice is not very uncommon. Even a compost of dung and soil I would recommend to have spread during the rain, or in a wet season, that the juices may at once penetrate into the ground. To use a simile—it is possible to keep a man alive for a long

period by administering nutriment to the skin, but there will be much greater benefit derived by him if he take the same quantity into his stomach; almost in the same proportion will the advantage be found greater of putting the kind of manures before named in the inside of the soil in preference to spreading them on the surface, even when manure is to be ploughed under, or put into drills. The sooner the operation of covering it with the soil after it has been taken out of the middenstead the better; yet I have seen, in the county of Chester, a large field intended for potatoes, wholly manured before the plough was set to work to cover one particle of it. That whatever portion of manure goes into the air is lost; and that all the essential qualities of it have a strong tendency to fly off in vapour, any man of common sense will admit; but the extreme degree in which they possess this propensity is what very few are aware of. A friend of mine, who is a skillful chemist, has furnished me with the following account in the farther explanation of this part of my subject.

"A cargo of manure was discharging from on board a canal boat, on a fine day, near the chemical works under my care, from whence dry muriatic acid gas was invisibly escaping. Upon a change of wind, which took place whilst this operation was going on, the gas from the works was conveyed by a light breeze in the direction of the boat, which gas, as soon as it came in collision or contact with the effluvia, or ammonia, from the manure, (and which was also invisible before these two gases came together,) immediately produced a dense cloud of muriate of ammonia, and which extended to the distance of a hundred yards or more, to the utter astonishment of the workmen, from its sudden appearance. The manure from this boat was afterwards spread upon a field adjoining the chemical works, and it was observed, for some time afterwards, that whenever the wind drove the gas in that direction, the same appearance took place, but was particularly visible in fine weather, producing a cloud of vapour of several yards wide across the field."

I will conclude with a remark or two upon the construction of farm middenstead, in which much improvement may, I am certain, be made. But this ought to be a work of the landlord for his tenant, or rather for the farm, as a good place for keeping manure is as great an advantage to an estate as a good barn.

I will not here attempt to lay down the length, the breadth, and the depth, which a middenstead ought to be, but I will say, in general terms, that it ought to be water tight at the bottom and up the sides, and either arched over, or surrounded with walls high enough to keep off the wind, and also the rays of the sun.

Where a tolerably large stock is kept upon a farm, probably two middensteads would be better than one. I have it in contemplation, as soon as I can afford, to form two; one for the

reception of horse manure, in connexion with the sties, in such a manner that the pigs shall trample as much as possible upon it, and their urine, and the waste they make from the slops carried to them, may keep it sufficiently moist, and prevent heating and evaporation, without the necessity of throwing an arch over. The other I intend to place close to the shippons; and, as the manure of horned cattle is of a moisture nature than that of horses, and as it is generally mixed with a smaller quantity of straw or other litter, I shall not form this middenstead for the accommodation of pigs. To keep the manure therein sufficiently moist, I will have channels very carefully formed, to carry, if possible, every drop of urine from the stables, as well as from the shippons, into it; and, notwithstanding the trouble of putting the manure in, and the still greater difficulty of getting it out again, in a wet or moist state, for manure can never be too throughly saturated with urine, propose throwing an arch over it with apertures, which may be closed by means of doors, or lids, to fit air tight. Between the two middensteads I will form a reservoir for any superabundant moisture which may be in either.

If any correspondent of the Farmer's Magazine shall approve of my ideas, and will, through the medium thereof, favour agriculturists and landlords with a plan and specification of a middenstead, &c., he may render a service to those who choose to avail themselves of such kindness; and having said thus much, I beg leave to close my remarks, though, if any one shall endeavour to refute my arguments, I may, perhaps attempt a rejoinder.

I am, very truly, yours, JOHN FORMBY.

ART. LXIV.—*On the Cultivation of the Leek.*

[FROM THE HORTICULTURAL REGISTER.]

Gentlemen,—I am happy to congratulate you on the success of your widely circulated, and justly esteemed periodical, and should you consider my trivial communication, on the culture of the leek, worthy of a small space in your magazine, I shall feel happy in its insertion, convinced, from the seeming neglect paid to this vegetable, that a few hints on my successful mode of its treatment, may at least not be lost on some of your leaders.

Sow the seed the latter end of February,* or the beginning of March, on a warm open border to the south. When the plants have attained the height of about six or eight inches, take them up carefully with a trowel, or other suitable instrument. Having cut or cropped a portion of their straggling roots and tops, make a puddle, which may be done by taking some of the drainings of a dunghill, and stirring it up with some of the soil of the quarter where the leeks are about to be planted, until it has the consistence of mortar; draw the roots through the puddle, and having the ground previously prepared by digging in plenty of well-rotted dug, (this is an essential requisite to the leek,) draw out drills with the garden hoe to the line, three inches deep, and fifteen inches between the rows. Having drawn the drills, make holes with the dibble to the depth of three inches, and six or eight inches apart in the drill: put in the plants at the same time as proceeding with the dibble, leaving the holes open.

By this method, and always planting out on the same piece of ground for a number of years, I never fail to obtain leeks, regularly measuring nine or ten inches round the white or blanched part.

I am, Gentlemen, yours, very sincerely,

ONE OF THE UNPOLISHED.

Hereford, February 7, 1832.

ART. LXV.—*On the Making and Managing of Hot-beds and Green-houses.*

[FROM COBBET'S ENGLISH GARDNER.]

I observed before, that it did not accord with my plan to treat of *Hot-houses*, which, as I then observed, was a branch wholly distinct from gardening in general, and applicable to the circumstances of comparatively very few persons; and that, therefore, to enter on such a treatise, would be of little use to the public in general, while it would injuriously augment the bulk of my work. Hot-beds are, however, of a different character: they may be made an amusement, and are even things of real utility, to a very considerable number of persons: to all, in short, who have

* In the Southern States, September, October, February and March, are perhaps the best months for this operation.—*Ed. So. Agr.*

gardens, and who have the stable-dung of two or three horses, or even of one horse, at their command, or who can procure such materials (as is the case in the neighbourhood of great towns,) at a reasonable rate. A green-house, upon a small scale, or adapted to the particular circumstances of the proprietor, is within the reach of a very considerable part of the community; and, therefore, without, however, considering it an essential object, or one worthy of very great attention, I give my opinions upon that species of gardening also.

Hot-beds are used either for raising such things as are not to be raised during the winter or the spring without such assistance, or for the raising of such things as are not to be had at all in our climate, without artificial heat of some kind. Before we speak of the form and dimensions of a hot-bed, it will be best, perhaps, to describe the *frame*, which is to go upon it; because the reasons for the directions for the making of the bed will then the more manifestly appear. A *frame* consists of four pieces of wood; and, let us suppose it to be twelve feet long, and four feet wide. Frames are sometimes of greater and sometimes of less dimensions; but for the sake of illustration, let us take a frame of this size. There must be one board or two boards joined together, to make the back, twelve feet in length, and eighteen inches wide; one board to make the front, twelve feet in length, and eighteen inches wide; one board, to make the front, twelve feet in length, and nine inches wide. One board at each end, to be joined on to the ends of the front and back; eighteen inches at the back, and nine inches at the front. These boards being well dove-tailed together at the four corners, and being about two inches thick, form the frame. Upon this frame, glazed sashes are put, which are called *lights*, and which rest upon the back and front ends of the frame, and also upon bars put across and fastened into the sides of the frame, in such a way as to form resting-places for the sides of the lights. This is quite enough of description; because the carpenters know how to make these things; and all that I have to do in this place, is, so to designate them that the reader may know what I am talking about.

Having the intention to make a hot-bed, you must first see that you have a sufficiency of materials. You take the stable dung, carry it into the hot-bed ground, and there put it into a conical heap. If you have not enough of dung from the stable-door, some from cow-stalls, sheep-yards, and even long stuff from pig-beds or pig-styes, half-stained litter; or any thing of a grassy kind, and not entirely dry, will lend you assistance; but, let it be understood, that the best of all possible materials for the making of hot beds is dung from the stable of corn-fed horses; and the next best comes from a sheep-yard, or from stalls where ewes and sucking lambs have been kept. Wheat straw is by far the best straw to have been used as litter, when the dung

is wanted for hot-beds. Bearing in mind that this is the best sort of materials, you must take what you have; and, if it be of an inferior quality, there must, at any rate, be a greater quantity of it. Having collected your materials together in the hot-bed ground, you next shake them up well together into a heap, in a flattish conical form. It is not sufficient merely to put the dung up together in this form: it must be taken a prongful at a time, and shaken entirely straw from straw, and mixed, long with short, duly and truly through every part of the heap, from the bottom to the top. When thus shaken up, the short stuff on the ground where the dung was tossed down out of the wheel-barrow, ought to be shovelled up very clean, and flung over the heap. If the dung be good, you will see it begin to smoke the next day. It should only lie two days and a half, or three days, before it be moved again. It should now be turned over very truly, well shaken to pieces again, and another conical heap formed of it, care being taken to put the outsides of the first heap towards the inside of the second heap. In two or three days more, it will have heated again sufficiently; and then it should be turned once more, especially if there be a great proportion of long litter in it. If the dung be very dry, and the weather be dry also, and especially if it have a large portion of long littery stuff in it, it should be watered with a watering-pot, when it is first mixed up, a watering being given all over the heap at every foot of height that the heap rises to. This is necessary to cause that fermentation without which there cannot be a hot-bed; but, generally speaking, this is not necessary, for dung is seldom flung out with so large a portion of clean straw, to prevent it from heating when thrown up in a heap.

It is as well to consider it to be a general rule, scarcely ever to be departed from, that the dung should ferment three several times during the space of nine days, before it be put in a hot-bed. Unless this be the case, the heat of the bed (unless the dung be very short at the beginning) will not be lasting, and will never be regular; nor will the bed be solid and uniform. It will sink more in some places than in others, and will be hotter in some places than in others; therefore, it is useless to be impatient, since the thing cannot be done well without this previous preparation.

The dung being duly prepared, you make the bed in the following manner, having first made the ground on which it is to stand, *perfectly level.* If the general surface of the ground round about be on the slope, you must take care so to change the situation of that part of the ground on which the bed is to stand, as to make that part perfectly level. It is not sufficient that you have the top of the bed level. The bottom must be level also, or else the sinking on one side or at one end, will be greater than on the other side, or at the other end; the frame will stand un-

evenly; the slope of the lights will be too steep, or not steep enough; the bed will sometimes crack; the water will run off and not sink into the earth; and, in short, without a perfect level whereon to place the bed, the inconveniences are endless.

Having got the level spot, you are to make a bed as nearly as possible of the dimensions of the frame; and the best possible way is to take the frame itself, put it upon the ground where you intend the bed shall stand, put up a straight piece of wood on the outside of each corner of the frame, while it is standing upon the ground; then take the frame away; then put a thin board edge-ways upon the ground on the back, and on the front, and at the two ends, which board ought to come on the *outsides* of the four stakes, and to be held up by four pegs. You have then a true guide for making the bottom of the bed; and you begin by putting a little of the longest of the dung just at the bottom. Then you go on shaking the dung into this sort of box, dividing straw from straw, and mixing long and short duly together, in the same manner as was before directed in the case of the conical heaps, and taking care to keep beating the dung down with the prong in every part of the bed. When you have shaken on dung to the thickness of four or five inches, beat all over again, and so on at every four or five inches deep, until the work be finished. When you get to the top of the boards, you will proceed very well without any; but you must be very careful to keep the outsides and ends perfectly upright; for this purpose, great care must be taken that the stakes at the four corners of the bed be placed perpendicularly. Strain the line now-and-then from stake to stake, and that will be your guide. Particular care must be taken to keep the *edges* of the bed well-beaten as you proceed; for, if you fail to do this, they will sink more than the middle will sink; and then there will be a crack in the earth in the middle of the bed. As you proceed, the perpendicular sides and ends ought to be well beaten also; and, when the work is finished, it ought to be a building as smooth and as upright as a wall, being perfectly level at the top, and, of course, of uniform height in all its parts.

When the bed is completed, put on the frame immediately. If the foregoing instructions have been observed, the bed will be about an inch longer, and an inch wider than the frame. It should not be more, on any account; especially if it be intended to receive those *linings* of which I shall have to speak hereafter. After putting on the frame, put on the lights; and, as you will not push the lights down in order to give air, you will find that the heat of the bed will begin to rise in the course of twelve hours, or thereabouts. As soon as the heat begins to rise, there should be some air given to the bed by pushing the lights, or some of them, down four or five inches from the back, or drawing them up four or five inches from the front; for, *stench* is not good,

whether before, or after, plants be put into the bed. In about three days, the bed will be in full heat. Some persons recommend to put a sharp-pointed stick down a foot, or a foot and a half into the bed, to ascertain the degree of the heat. Your finger is a great deal better than a stick: whatever heat there is must discover itself at the top of the bed, and there it is that your finger, well poked down into the centre of the bed, will enable you to judge of this matter a great deal better than any thing else. It is a delicate matter: it is one of the things that demands the greatest possible attention; for, the heat of dung, though it will not probably come to a blaze, in any case, as a hay-stack sometimes will, it will *burn* as completely as fire; and, if the earth be put on too soon, it will burn the earth into a sort of cinder, in which nothing will ever grow until that earth has been for some time exposed to the atmosphere. You must, therefore, be very careful to ascertain that the burning powers of the bed are passed, before you put on the earth. The rule for arriving at a certainty of this knowledge is this: the next morning after you have made the bed, poke your fore-finger well down into the centre of the top of it; and continue to do the same every morning and every evening, or more frequently. You will find the heat increase, till (if the bed be a strong one) the heat be two great for you to endure your finger in it for a moment: soon after this, you will find the heat begin to decline; and, as soon as you can bear your finger in it without any inconvenience, you may put on the earth all over the bed to about six inches depth, which earth ought not to be as dry as dust; but ought, at the same time, not to be wet.

Thus is the bed ready for the receiving of seeds or plants: thus is the hot-bed made: these are the general instructions for the making of hot-beds, which are to be of different heights, of different strength, and managed subsequently in a different manner, according with the nature of the different plants to be cultivated in them, and according to the season of the year, when the sowing, planting, and cultivation is to take place. Cucumbers and melons, are, in England, the principal things for the rearing of which hot-beds are usually made: there are, however, several other things which are forced forward by the means of hot-beds; and, in the treating of cucumbers and melons, and of those other sorts of garden plants which are raised in hot-beds, I shall, under the names of these several plants, in the alphabetical list, give direction for the management of the hot-beds in which they are placed. A hot-bed for the purpose of getting early radishes, is a very different thing from a hot-bed adapted to the raising of melons and cucumbers; and, therefore, no general directions for the management of the beds can be complete: the heat which is absolutely necessary to bring cucumbers to perfection, would totally destroy radish plants, or, at least, prevent them from ever producing a radish fit to be eaten; but, as to the manner of making

beds, it is the same in all cases; and of that manner, I think I have here given directions sufficient for any person, even though he had never seen a hot-bed in his life. I will just add, that the quantity of materials may be augmented by using a great plenty of straw as litter, instead of being sparing of straw; and that, if you have the making of hot-beds in your eye, it is good, during the fall and the early part of the winter, while the materials are creating, to let the dung from the stable be flung rather widely about; and not into heaps, in which it would heat, and exhaust itself before-hand.

(To be continued.)

PART III.

MISCELLANEOUS INTELLIGENCE.

Rhubarb.—We ought to have added to the article written by the Editor of the American Farmer, and copied in our 23d number from the Southern Agriculturist, that all subsequent trials of the rhubarb in diarrhea, either in children or adults, have proved wonderfully efficacious. During the present summer our children have had frequent attacks of summer complaint, and we have applied the usual remedies with very little effect. In each instance we have been obliged to resort to the rhubarb at last. We have ventured to make these trials of the usual remedies, the more effectually to put both them and the rhubarb to a fair test, and feel authorized by numerous instances of its success, and by the absence of a single failure, to say, that the rhubarb conserve is unequalled as a remedy for common bowel complaints in children and adults. A tea spoonful of the conserve spread on a piece of dry bread is the best mode of administering it, and of this children are very fond.—*Amer Far.*

Traps for Catching Larks.—The fowlers in our neighbourhood have commenced taking larks with nets and a device glass of simple construction. The birds are of the kind known as hill or flight larks. A small bridge, covered with a piece of glass, is by means of a draw-string made to revolve rapidly on a pivot, the rays of a rising sun falling on the glass. Such is the strange infatuation of the birds, that, however distant, they immediately fly towards it, and are either taken by clap-nets or shot.—*Gar. Mag.*

Rotation of Crops.—Volumes have been written on the subject of the rotation of crops. These writers have assured us that good crops of wheat, flax, rye, corn, oats, peas, grasses, &c., might be raised in succession on the

same land, and each crop find in the soil, the nourishment proper for its production.

All this I hold to be error. It seems to be very generally admitted that vegetables take very little of any thing from the earth, save water: and that they derive their principal support from the atmosphere.

Let us suppose a crab-apple stock, grafted with a sweet apple scion, it appears evident to me, that the original stock continues to receive the same nourishment from the earth as it did before it was grafted; for if it puts out a branch below the graft, this branch continues to produce crab-apples: but on arriving on the graft, this sap, or watery matter is differently modified by the vessels of the graft. All those principles, congenial to the crab apple tree are evaporated and thrown off; and only such retained as are proper for the production of a sweet apple.

Again, suppose a cabbage and cicuta plant growing contiguous to each other. It appears evident, that they both receive the same principle from the earth; and that each has the power of assimilating its food to its peculiar nature: the one produces a deadly poison, while the other produces a harmless esculent vegetable.

Many other circumstances might be mentioned to corroborate these views, but I deem these sufficient to make the subject understood.

It has been urged that if this doctrine be true, *then poor land is as good as rich* for the production of vegetables. But I think that this is an error also.

Manure buried in the earth by the plough or spade, is slowly converted into the food of plants, charging the earth in the neighbourhood of the plants, with vegetable food. This food is exhaled by the earth in an elementary state, is absorbed by the capillary vessels of the plant, and assimulated to its peculiar nature. I have known the same piece of ground produce good crops, annually, for twenty years in succession, without any change of crops; but it was yearly supplied with a good dressing of manure. I therefore am inclined to believe, that the doctrine of the rotation of crops is erroneous.—*Gen. Far.*

Germination of Seeds.—The memoirs of the Caledonian Horticultural Society, vol. iv. contains some interesting experiments made by John Murray, Esq. on the germination of seeds and subsequent vegetation.

Mustard and cress seed were sown upon black, white, and red woollen cloths, kept constantly wet. The germination on the first was tardy, and the vegetation quickly; on the others luxuriant and beautiful.

Like seeds were sown in powdered alum, sulphate of iron, soda and magnesia, and muriates of soda and lime. The seeds germinated only in the first.

Like seeds were partially roasted, others submitted to the action of boiling water, all of which grew; showing that elevated temperature did not destroy their vitality. In like manner, seeds of maize and the yellow locust, will bear a high temperature without injury. Peas and beans, with boiling water poured on them, sprouted in a few hours and did well. Our gardeners do this with onion seed, to test its goodness. If good it soon sprouts, but will not grow.

Seeds sown in the mineral acids, diluted, did not grow. But those sown in carbonate of magnesia, and watered, germinated freely; thus disproving the conclusion of Tenant, which has been adopted by subsequent philosophers, that magnesian limestone is injurious to vegetation.

Other experiments went to demonstrate, that the metallic poisons, destructive to animals, are no less deleterious to vegetation; that ferruginous matter holds the first rank in these poisons, and that these substances were absorbed by the roots of the plants.

Albany, September 2, 1832.—N. E. Far.

Growing Potatoes in a Cellar.—A German paper has published the following account, communicated by the person who made the experiment:

"I covered a corner of my cellar with a bed an inch thick, of two-thirds of river sand, and one-third of common mould. In the month of April, I put into it thirty-two yellow potatoes, the peel of which was very thin, and placed them on the surface, without covering them either with mould or sand. They produced an abundant crop; for at the end of the ensuing November, I gathered above one-fourth of a bushel of the best potatoes, the tenth part of which were as big as an apple and the rest as a walnut. The peel was very thin, the pulp white and mealy, and the taste exceedingly pleasant to the palate. During the six months these potatoes lay under ground, I used no culture whatever, and yet they grew without the influence of the sun or the heat of the day. This essay might be put into practice with advantage in fortresses, in houses of correction, and indeed in every dry cellar of large cities, where it is of great importance to have a wholesome and abundant food for a large population."—*Br. Far. Mag.*

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To Heal the Wounds of Fruit or Forest Trees—When the tree is cut, or otherwise wounded, smooth the place with a sharp knife, and if cankered, scrape or cut it all out; then put half a pound of tallow into two pounds of tar, warm it over the fire till the tallow is melted, then add one ounce of saltpetre, and stir it together, and lay it on the parts you want to heal.

Hort. Reg.

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Cultivation in Arabia.—"Although the Arabs cultivate the ground, they do not hold it in any fixed occupancy. The whole region is one immense common, over which the different tribes are in continual motion. When they come, at the rainy season, to a favourable spot, they sow it, wait about three months for its growth, reap the harvest, and proceed onward. The Fellahs, or fixed cultivators, are objects of their most profound contempt, and an alliance with them is considered as involving the deepest ignominy.

Gar. Mag.

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Onions from Time Immemorial—To give some idea to those who have not thought on the subject, of the effects of age upon a cultivated soil, I shall here mention a fact that struck me as being not a little singular at the time it occurred. At Dunstaffnage, near Oban, in Argyleshire, Scotland, which is a mountainous country, and naturally a barren soil, a small garden was pointed out to me, on which was growing at the time one of the finest crops of onions I had ever seen. I took notice of it with some degree of surprise, because I had seen no other crop of onions in that district that was tolerable; but my surprise was a good deal augmented on being told, that the present crop in that garden was by no means remarkable; that it had been cropped with onions, year after year, from time immemorial; that the present owner of it, who is a man above eighty years of age, had never seen any other crop than onions upon that ground; and that the oldest person alive, when he was a boy, had told him the same thing, and the crop was always an excellent one. Dunstaffnage was a royal place, belonging to the kings of Scotland at an early period of their history almost beyond record, and there can be little reason to doubt that this garden was brought under cultivation at that time, so that it cannot now be less than five hundred years old, and probably several hundred years more. I question much if the soil could have been rendered capable of producing successive crops of such fine onions, for a great many years after it was first turned up from waste, by any device that the ingenuity of man could have suggested. To judge, then, of the most profitable mode of cropping such old soils, by the same rules that would apply to those which had not time to be fully matured, would be very absurd. Many cases of this sort would no doubt occur on our survey of the Netherlands, could it be properly effected.—*N. E. Far.*